THE
CYCLOPÆDIA OF HOME ARTS

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WITH NEARLY 600 ILLUSTRATIONS AND DESIGNS

EDITED AND COMPILED
BY MONTAGUE MARKS

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PREFACE.

THE criticism of the man who returned the Dictionary with the remark that he had perused it with benefit, but found the stories rather short and disconnected, in a measure applies to an Encyclopædia. In the present volume, however, the usual encyclopædic form has not been insisted on, and it is hoped that consecutive reading in it may be found not only not difficult, but on some subjects even agreeable. The aim constantly in view has been to interest the reader while trying to instruct him; to acquaint him with the technical processes of such of the graphic, plastic, and applied arts as may be practised at home, and at the same time, so far as feasible, supply him with models, designs, and motives for the application of the information acquired.

Art, undoubtedly, is a serious study; but on that account it need not be made unpalatable to the beginner, as too often is the case. On the contrary, from the very first steps, it may be made a source of genuine enjoyment to any person of taste, and that without sacrifice of its dignity as a serious pursuit. No pretence is made to show a royal road to the acquirement of artistic accomplishments. Earnest study and close observance of the fundamental rules of Art are insisted on, no matter how unpretentious or even trivial the task in hand may be. The decoration of a fan-mount or of a cup and saucer should be undertaken with no less regard for the broad principles of Art than would be deemed essential in the painting of a picture or the modelling of a bust.

All of the Graphic Arts that may be practised at home are included in this book, and some that cannot be conveniently practised there, such as LITHOGRAPHY and MURAL PAINTING. These two topics have been touched on with the aim of directing the attention of the art student to them as possible fields for his talents, not with any idea of exhausting them, The same may be said in regard to the chapters on DESIGNING FOR THE ART TRADES, which subjects should be thoroughly studied with the aid of such excellent technical handbooks as have been provided by Mr. Lewis F. Day and Mr. Gleeson White.[1]

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[1] See p. 399.

Among methods of Drawing, Silver-point[1] is not included, for it is purely a master's process, and nowadays it is rarely practised even by the masters.[2] At first blush, ENGRAVING ON WOOD might seem to have as much right to a place as ETCHING or DRY-POINT. Unfortunately, however, the practice of this art has become almost as obsolete as line-engraving on metal,[3] and, in view of the strictly practical aim of the book, it will easily be understood why both subjects are ignored in favour of Drawing for the Reproductive Processes, in accordance with the popular demands of the day.

In a work of an encyclopædic character it is not easy to assign the exact degree of credit to which each contributor to its pages is entitled. It is true that articles may be signed, but this plan would not have been practicable in the present volume, except at considerable sacrifice of that homogeneousness which it has been specially sought to maintain. This applies in particular to the sections of DRAWING and PAINTING. Here, exigencies of editing have in so many instances involved recasting and rewriting, that it would not be fair to hold the original contributors responsible for the articles as they now appear. The editor, however, desires to acknowledge fully his indebtedness to Mr. Roger Riordan,[4] Mr. Ernest Knaufft, Mr. and Mrs. Frank Fowler, Mr. Gleeson White, Miss Katharine Pyle, Miss Patty Thum, Mrs. Emma Haywood, Mrs. Lavinia S. Kellog, and Mrs. Frieda V. Redmond, from whom, collectively, nearly all the material of this section of the book has been derived.

Under WATER-COLOUR PAINTING, the description of the modern Dutch method of combining the "wet" and "dry" paper processes is by Mr. H. W. Ranger, an American painter of distinction. The chapter on "Costume and Colour," in Portraiture, is by Mr. A. L. Baldry. MINIATURE PAINTING, TEXTILE PAINTING, and PYROGRAVURE, are written mainly by Mrs. Emma Haywood, as is PASTEL PAINTING by Miss E. M. Heller. GRANGERISING is by Mr. Carle Herrick, and TAXIDERMY by Professor J. B. Holder. The articles on PAINTING IN MINERAL COLOURS are by Mr. Charles Volkmar, Mr. J. F. Flögel, Miss C. E. Darby, Mrs. Anna B. Leonard, Mrs. L. Vance-Phillips, and Miss Fanny Hall. Those on ILLUMINATION are written and illustrated by Mr. C. M. Jenckes. MODELLING IN CLAY is chiefly by Mr. James T. Hartley, the eminent American sculptor. To Mr. Benn Pitman, Mr. John Van Oost, Mr. Leo Parsey, and the late Miss Lily Marshall we are indebted mainly for the letterpress of WOOD CARVING, and to the first-named for the greater part of the illustrations under that head.

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[1] The principle of the Silver-point is familiar to all by its application to the old-fashioned memorandum book, for which a metal-pointed stylus is provided to be used on enamelled paper. The silver-grey line made by this pencil is indelible, and this naturally restricts its usefulness.

[2] Among the few artists in England who have used the silver-point are Professor Alphonse Legros, Mr. Whistler, the late Lord Leighton, and the late Sir Edward Burne-Jones.

[3] Etching and Dry-point are also *line* engraving on metal, but the line in each case is free, not formal, as in line-engraving proper.

[4] Mr. Riordan's pen has been active in various other parts of the book.

The article on HAMMERED BRASS and many of the designs and illustrations are by the Messrs. Gawthorp, proprietors of the Art Metal Works, in Long Acre, bearing their name. It is chiefly through the efforts of this firm that *repoussé* metal work has become a favourite pastime for amateurs; they have instituted classes for their instruction and have made special tools and appliances to lighten their labours.

Part of the chapter on "Preparatory Study," in APPLIED DESIGN, is derived from an address delivered by Mrs. Candace Wheeler to a class of girl students in New York.

Acknowledgments are due to Mr. B. T. Batsford for his courteous permission to use several of Mr. Day's designs from "The Anatomy of Pattern," to Messrs. George Bell & Sons for the use of diagrams from "Practical Designing," and to Messrs. Macmillan & Co. for the loan of a useful illustration from "The Minor Arts," by Mr. Leland.

Thanks are due to Mr. George H. Boughton, R.A., Mr. Walter Crane, and other artists, for permission to use drawings and designs.

Notwithstanding the care that has been taken to avoid errors, it can hardly be hoped that a volume dealing with so many technical subjects will be wholly free from them. The editor will be grateful to any one who, discovering any, will point them out, so that they may be corrected in a future edition of the book.

MONTAGUE MARKS.

46, HARCOURT TERRACE, S.W.,
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The Cyclopædia of Home Arts.

DRAWING.

INTRODUCTORY.

ANY one who can learn to write can learn to draw.

The art of drawing consists chiefly of training the eye to see correctly. This faculty having been acquired, the mere recording upon paper with pen or pencil what is seen is a very simple thing, to be learned, with application, by any person of ordinary intelligence.

"But why should a special training of the eye be necessary?" some one asks. "Surely one cannot need to learn over again such a purely natural thing as seeing." To see correctly, however, does not seem to come by nature. Unless specially trained, we are apt to ignore certain impressions received through the senses, substituting for them false ones, which we unconsciously accustom ourselves to accept as correct. For example, because we know that a wheel is circular, it still seems circular to us when we get a side view of it, although in fact it is elliptical. We do not take the trouble to observe; we have unconsciously trusted to our memory for our facts, instead of to our sight, and the false impression has permanently remained with us, to our confusion.

Nor is it different in looking at a living object. The head, for instance, is so much more familiar than the rest of the person, that any one trying to draw a man or woman for the first time would be sure to make it much too large for the body. He would also make the eye too large for the head, and if he undertook to show the head in profile he would be pretty certain to substitute a front view of the eye for a side view of it. Probably, too, he would place the eye somewhere about the middle of the cheek, and drop the ear over the neck, if he did not raise it to the level of the forehead.

After a little practice, based on studious observation, he will cease to make such childish errors; and having also learned a few simple rules regarding human form and proportion, he will not make his men or women either dwarfs or giants.

By this time, our uninstructed beginner may have learned to draw some common objects, and even the human figure, so as to be recognisable, and he, doubtless, will flatter himself that he is getting on famously, until he tries to group them and place them in proper relation to their surroundings, so as to form a picture. Then he will find how futile have been his unaided efforts, that he has been proceeding entirely in the wrong way; in fact, that he has been trying to run before he could creep. He will have to go back and begin at the beginning, to do what he should have done in the first instance—learn to observe, *i.e.* see, correctly.

MEDIUMS FOR DRAWING.

I. THE LEAD PENCIL.

THE ordinary black lead pencil is most commonly in every-day use, and therefore would seem to come most handy to the novice. For serious study of outline and form on a somewhat restricted scale, no tool has been devised that can supplant it. It does not give the strength of colour of charcoal or crayon, nor does it allow of such breadth[1] and freedom in handling;[2] but it permits of delicate gradation[3] in shading not possible with either, and a dainty, silvery quality peculiarly its own. To the artist it is invaluable for sketching; it can suggest the broadest effects, and the finest detail is within reach of its point. While it is somewhat too monotonous for producing a complete picture, for laying the foundation of a picture there is nothing to equal it.

Materials.—Drawing paper, lead pencils of various grades (those marked H, HB, F, B, and BB), a drawing board, a few flat brass-headed "thumb tacks," a sharp penknife, and a piece of indiarubber or crumb of bread are all the materials and tools necessary.

To sharpen a pencil, the proper way is to grasp it in the left hand, holding the end which is to be cut *away from you*; then the wood should be removed, leaving not more than one-fifth of an inch of lead exposed for a point.

The pencil is held longer and less rigidly for drawing than for writing. The arm must be allowed to move freely from the shoulder, especially in sketching; if held at all stiffly, a free, steady outline cannot be made. When greater precision is needed, as in putting in details, the pencil may be held shorter and somewhat firmer.

For sketching, use a pencil at least as soft as B. Bear lightly on the point, especially while you are "feeling" for your lines. It will be all the easier to erase or correct them, without injuring the surface of the paper. Having sketched your outlines very lightly and correctly, you may mark them more firmly with a harder pencil, an H or HB.

Erasing Pencil Marks.—Crumb of bread is better than rubber. It must neither be quite fresh nor stale. Above all, it must not be greasy, as bread made with milk is apt to be.

II. DRAWING WITH CHARCOAL.

For acquiring at once a broad, free manner of sketching on rather a large scale, no medium is so good as charcoal. Brilliant and striking effects are easily and rapidly obtained with it; but this is of less importance to the beginner than that a drawing in charcoal may be corrected again and again without injury to the surface of the paper. Until it is finally secured by "fixing"—a process we shall explain presently—the whole or any part of it may be dusted off with a soft cotton rag. Lights or half-lights which have been inadvertently covered may be restored or modified by merely touching the parts with a piece of chamois skin on the tip of the finger.

There are two ways of drawing in charcoal. In the one the point alone is used, the shading being put in simply by hatching (*i.e.*, causing the lines to cross each other, more or less closely, at acute angles, so as to form a lozenge-shaped network). In the other way all the lines are blended by being rubbed together with the cigar-shaped paper or leather tool called a stump. Examples of both methods will be found a few pages further on.

Materials.—The French charcoal is the best. It is usually made from vine, osier, or willow twigs, and is sold in short, firm sticks. Other materials and implements necessary are some sheets of slightly rough charcoal paper, a few assorted paper stumps, and some crumb of bread, not fresh, but soft enough to be rolled up between the fingers into pointed pellets to be used as an eraser.

---

[1] That simplicity in the treatment of masses which is due to the subordination of details to the spirit of the whole.

[2] The manner of rendering.

[3] Gradual change from light to dark, or (in painting) from one colour to another.

A pointed rubber or leather stump is convenient (as an eraser, or to take out lights from a mass of dark) when bread cannot be had for the purpose. A small piece of chamois skin is useful in a similar way.

A drawing board and some "thumb tacks" will be needed. If you have an easel to place the board on, so much the better; for it is more desirable to work in an upright position than to lean over a table.

Fixatives.—A charcoal drawing is smeared or defaced at the slightest touch, and to protect it the application of a special preparation is necessary. Some students dissolve a little shellac in alcohol, and apply it themselves to the back of the drawing; others wash the back of the drawing with milk. Both ways answer well enough for the time being, but the paper will discolour after a while. The best way perhaps is to spray the surface of the drawing with "Fixatif Rouget" by blowing it *steadily* through an atomiser (such as is used for perfume). Care must be taken in the operation; for if too much of the liquid is used the charcoal will run down in streaks, and where too little has been used the charcoal will rub off.

Drawings, whether in lead pencil, charcoal, or crayon, should be fixed as soon as finished.

III. DRAWING WITH CRAYON.

Drawing in black chalk, or crayon, as it is usually called, is so similar to drawing in charcoal, that, so far as the use of the point is concerned, the directions given for the one may almost serve for the other. While a drawing in charcoal, however, is so unstable that it must be "fixed" at once to save it from effacement, a drawing in crayon is no more perishable than one in lead pencil.

Of the two mediums, the crayon is much the more difficult. It takes experience to understand how to use it with suppleness and without heaviness. It is not by bearing on that black is produced, but by passing over and over the same place, and always very lightly. In this way you get mellowness and avoid dryness. Hold the crayon inclined, not perpendicularly, as in writing, and do not press it between the fingers.

Charcoal and crayon may be used in combination in the same drawing. The former being the more easily managed for alterations and corrections, naturally is used in the earlier stages of the work; but it *must not be stumped* or rubbed in any way

Erasures of Crayon are made with bread or rubber. Bread is best.

Materials.—Crayons enclosed in wood, like lead pencils, do very well for small drawings. The more usual form is the short stick, which, when in use, is fastened in a holder, called a porte crayon; it allows of much greater freedom in handling than the crayon pencil, and is much cheaper. The French Conté crayons are generally preferred by artists. The No. 2 is sufficient for all purposes. Academy chalk is also good.

Sharpening a Crayon.—Cut with a long slope, from the point downward towards the porte crayon, otherwise the stick will break. A sharp knife is necessary.

Stumping is used for blending into a tone lines made with the point. But, in addition to the stick crayon, there is what is called "*sauce crayon*"—finely powdered, soft, black chalk, which you can rub on with the stump for shading.

Sauce crayon should be used sparingly, and only in covering the larger spaces of shadow; for small areas, as in the face and hands, for instance, the point of the crayon rubbed over the charcoal, and then flattened with a fine paper stump, will generally be found to be sufficient. Merely pass the stump lightly across the space requiring shadow, and endeavour to put on a flat, even tone, varying the shadow afterward with the point and by reflected lights.[1]

---

[1] A reflected light is the light seen on the shadow side of any object and reflected from some other object.

IV. RED CHALK.

Red chalk is excellent for drawing the portraits of women and children. The French painters of the last century used it very effectively for this purpose, and Boucher, Watteau, Lancret, and others of that school commonly employed it for their studies, especially of women, children, and cupids. They used paper of a slightly yellow tone, which, when the subject is a nude one, suggests the warmth and glow of flesh. Hamerton points out that the degree to which the choice of drawing materials may suggest life or the contrary, when there is no colour whatever in the sense of making and copying tints, may be fully understood by the experiment of drawing a living figure in red chalk on cream-tinted paper, and a corpse in black chalk with white lights on a very cold gray paper: it will readily be seen then how the materials help the expression of life and death. There has been a revival of drawing in red chalk. For pictures or studies it is intended to frame, the medium is more decorative than black crayon.

V. PEN AND INK.

(See p. 31.)

GENERAL PRACTICE OF DRAWING.

I. FIRST STEPS.

THERE are two kinds of drawing: (1) useful drawing, and (2) artistic drawing. Hamerton states the difference as follows: "The purpose of useful drawing is to explain the construction of an object, but the purpose of artistic drawing is to produce a visual effect to which full constructive explanation may be an impediment. The artist knows as much as a draughtsman, but he ought not to insist upon his knowledge. A poet may have studied geography, but he must not write like a geographer."

As we have said before, drawing is the art of observing correctly; but the kind of observation needed for useful drawing is not quite the same as that needed for artistic drawing. The drawing employed in the study of botany, for instance, is a variety of useful drawing. In observing a flower for botanical purposes, we would be careful to note the veining of the leaf, the nature of the petal, and we would patiently dissect the whole flower to discover facts about it that we could not otherwise see.

In artistic drawing, we would observe the flower as a whole before concerning ourselves about the detail. First we would take note of the general nature of the lines suggesting the character of the growth of the object as a whole. Then we would observe the proportions of the leaf, the form of the flower, and the relation of the one to the other. Later, we would take note of such details as were visible from our point of observation; at no time would we concern ourselves about any details which we could not see without changing our position or that of the object before us.

For our first drawing lesson, of course we would not attempt anything so difficult as a flower. We shall take a simple geometrical solid—a cube, say—and before we draw it we shall observe it from the artist's point of view; that is to say, as it appears. We shall not attempt to show any more than we can see of it from where we sit. It has six sides, but it is impossible to see more than three sides of a cube at once.

Learn the facts of the model[1] for yourself. Set the block before you, and its face is visible. Place it above you, and the base is visible. Place it below the eye, and the top is visible. Place it to the right, and the left side is visible; to the left, and the right side is visible. In the same way, study and draw the facts of the square prism, the cylinder, cone, and other geometrical solids. This may seem rather dry work, but it will be wise not to neglect it. In connection with such a course of model drawing, it is desirable to study the elements of perspective.[2] It will not be difficult to acquire these with the aid of a good text-book.[1] You will soon see that almost everything in nature, and every familiar object in your home and in the street, is founded on some geometrical form. Your chair (minus the back) gives the lines of a cube, and you can readily arrange the books on the table to take the same form. Your music roll is a cylinder, your brother's kite a polygon, and the open fan before you a semi-circle.

---

[1] A *model* is a form, drawing, printing, or print, used for study.

[2] *Perspective* is the science of apparent lines and colours in nature as relating to form and distance; it teaches you to see things as they are, and not as you may fancy them to be.

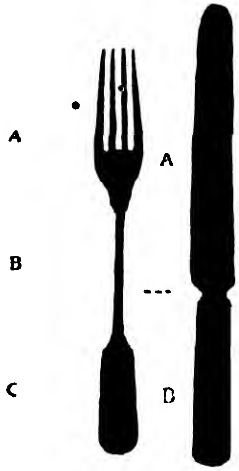


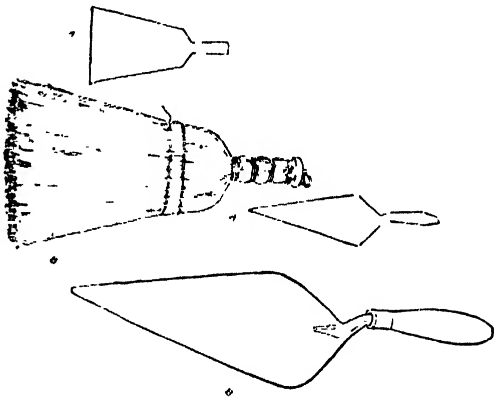
FIG. 1.
OBJECT DRAWING.

Having studied formal geometric figures, so that you readily recognise the corresponding forms in familiar objects about you, you may begin to use the latter themselves as models. At first, do not choose those that call for much shading. It may be well, indeed, to confine yourself for a while to the study merely of outlines and proportions. For example, set up a knife and fork against the window pane, thus bringing the margins out sharply against the light and throwing the surfaces into shadow. You will thus have obliterated the details, so that you see nothing but the *silhouette*[2] *i.e.*, the outlines filled in with dark masses. Draw the outer edge of each object just as you see it, and carefully note the proportions. The fork has three members—A, B, and C; the knife has only two A and B. Which is the longer: the B part of the fork or the B part of the knife? Is A or C the longer member of the fork? And so on. Having thus mentally noted the general proportions of each object, make a full-size outline sketch of the two together. Finally, with the aid of a rubber, convert this into a neat drawing, with firm clean outlines.

For purposes of comparison, it is well to place side by side objects the outlines of which are similar; for instance, a coal shovel near a whisk broom, or a bread knife near a trowel. Observe in the outline the qualifying character of each object.

The next step from the *silhouette* is to the more complete outline.

Practice in "blocking in" the general forms of objects as in A of fig. 2, and A of fig. 3, will lead to the working of A in fig. 3, and that in turn will lead up to B in fig. 4. Do not expect to advance at a bound, from the simple blocking-in lines[3] shown at A to the complex curves and shading seen at B. It indeed requires the knowledge and experience of an artist to suggest (1) complete outline, (2) form, and (3) texture, with the minimum amount of line, as is done in our drawings of the whisk broom and the kettle. The beginner naturally will



FIGS. 2, 3.—OBJECT DRAWING.

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[1] "Principles of Perspective as Applied to Model Drawing and Sketching from Nature," by George Trowbridge (Cassell & Co., Ld.), may be confidently recommended. Under "Landscape Painting in Water Colours," we shall presently deal with perspective, both linear and aerial, so far as it is needed for ordinary purposes in sketching from nature.

[2] *Silhouette* is derived from the name of a parsimonious French Minister of Finance, who, in satire, was portrayed only by his shadow shown in profile. This kind of portrait became popular throughout Europe.

[3] *Blocking-in lines* are those used by artists to give the lightest and simplest suggestions of the leading lines and masses of a subject. The blocking-in lines in our illustrations appear somewhat heavy, because they are printed instead of being merely sketched in very lightly with lead pencil or charcoal.

have to employ much more shading to get the effect of rotundity. These illustrations and fig. 5 indicate how the making of the blocked-in outline will *lead to* the making of the curved outline, after he has learned to employ the pencil with facility.

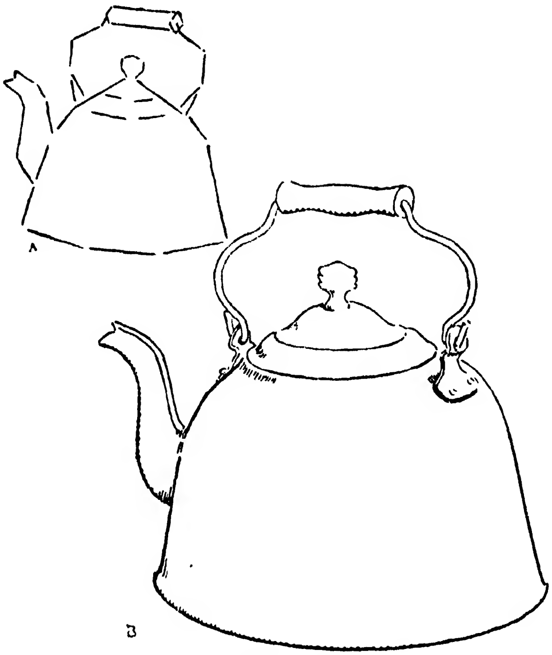

FIG. 4.—OBJECT DRAWING.

A crayon pencil, instead of a lead pencil, may be used for these and similar exercises in drawing; but in either case the shading should be done only with the point or with the side of the pencil; no attempt should be made to blend[1] the lines, with a stump or otherwise. When we come to drawing from the cast with crayon and charcoal, we shall see how the stump is used as well as the point; but stumping or other rubbing would be unsuitable for any crayon drawing on a small scale, and should never be used in lead-pencil drawing. Shading in these cases is done by means of rather short parallel strokes, which in a curved or rounded object generally follow its contour; also by hatching and cross-hatching. (See "Drawing for Illustration," in pen and ink, under which head the subject of shading with lines, generally, will be more fully described.)

As soon as you are able to draw the forms of objects with some degree of exactness, you should begin to study their "values"—*i.e.*, their relations to dark and light. Take one of the teapots, kettles, or similar objects which you drew in outline, and, setting it up against some even-coloured background, proceed to shade it, after first noting well which is the darkest, which the lightest, and which is the middle dark of the object. Observe not only the relations, as to light and colour, of the parts to each other, but their effect as a whole, and the relation of the object to the foreground as well as to the background. Every stroke of your pencil or crayon will then have an intelligible meaning, unlike the usual eccentric attempts at shading by the uninstructed beginner.

The importance of these exercises probably will not be fully appreciated until you take to painting, as presumably you will by-and-by. The practical knowledge thus acquired will then serve you in good stead. Indeed, without such elementary knowledge of values as you will have acquired by such exercises, it would be hopeless to expect to succeed at any branch of painting.

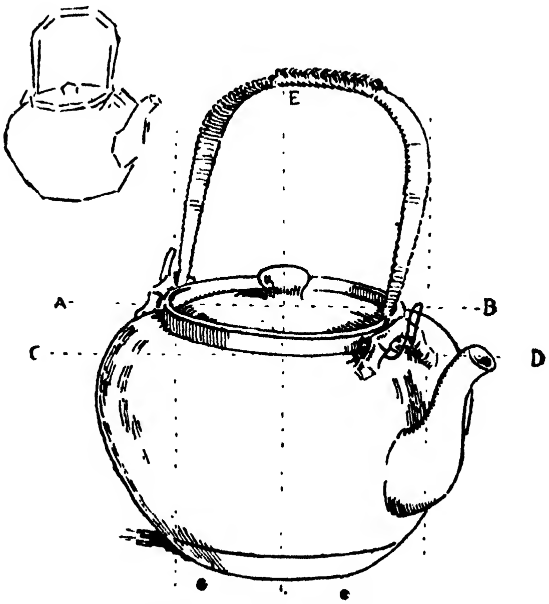

FIG. 5.—OBJECT DRAWING.

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[1] That is to say, soften and bring together.

II. DRAWING FROM THE CAST.

No one who aspires to become an artist can afford to neglect this important branch of study. Not that it will help you much at first to understand what is meant by "the sublimity of the antique." Such appreciation is more likely to come after drawing from the living model than before it. It is chiefly valuable to the beginner because it is the simplest and best way to study form and light and shade. In some cases, in drawing the human figure, you can at first learn more by studying from a cast than from life. In learning to draw the hands, for instance, the beginner cannot do much with the living model. Very few persons place them naturally with a correct and supple movement, and the hand is easily numbed and becomes stiff.

If you are working in a small room, a cast two and a half to three feet high will be large enough. It should stand on a table of ordinary height, three to six feet away from the window. Take up your position at a distance equal to three times the height of the model. The window should be arranged so that the light enters from the top only, and, if possible, above the figure. This will effectually prevent the light from disturbing the eye, and will also cast upon the object to be studied a more effective balance of light and shade. You will need a few sticks of charcoal, one black chalk pencil in wood, or a couple of stick crayons to be used in a holder, half a dozen paper stumps of various sizes, some *sauce crayon*, a portfolio or drawing board, and two or three sheets of rather rough French charcoal paper. An easel and a plumb line will of course be needed.

Take two or three sheets of paper on your board, as these will prevent your drawing from being marred by the inequalities of the wood or pasteboard underneath, and yield a surface on which the crayon and stump will work well. Having, with four drawing pins, strained the three sheets tightly on the board and adjusted them properly, remove the two lower pins. Gently turn up the top sheet until it meets exactly the upper edge of the paper; then press lightly with the finger in the centre of the fold, so that it is slightly creased where the pressure comes; allow it to fall back again, and re-pin it at the bottom, and you are ready to begin work, for you have already found a line whereon should be placed the middle of the figure before you. This is the quickest and surest way of finding the centre of your drawing. With this point of departure, make your study as large as the paper will permit,—the top of the head close to the edge of the paper; the toes or heel, as the case may be, as near as possible to the bottom of the sheet.

The generally accepted canon for the height of the Greek figure is eight heads; do not, however, take this scale for granted, but measure off on your crayon from where you sit the number of heads in the particular figure, and indicate them on your paper. After this is done, look long and intelligently at the cast, so as to become imbued with its general poise or "movement." Drop an imaginary line down the middle of the sheet, or draw it lightly with charcoal; you will then be able to determine readily how much of the body is projected either to the right or left of this line, which is a great aid in establishing the movement of the figure.

Now, being ready to put charcoal to paper, first of all sketch, in low, sweeping lines, from head to feet, the general action or "swing," as artists express it, of the figure; then block in the head in its width, having already found its length in the general movement. Determine the width of the shoulders and of the hips in relation to the height of your model. Take advantage of all salient points as posts of reckoning, giving in as large a way as possible full importance to these projections, and draw with a free, light touch from point to point.

Having well sketched in the movement and proportion of the full-length cast, the next step will be to block in the general masses of the shadow. Look well to see if the larger mass be of light or shade, and draw it lightly in outline (on the head, for instance), filling in the shadow so outlined with flat strokes of the charcoal. Make your charcoal shadow of only one force of dark, ignoring, for the present, half-tints and intense accents. Reserve this resource, with other details which complete the drawing, until going over it again with crayon and stump in addition to the charcoal, at which time you will devote special care to observe accurately the highest lights and deepest darks on the object.

After indicating these, return to the head to put in the features, then the body and arms, carefully studying the forms of the muscles and so on. Now strengthen your darkest darks, and give attention to the reflected lights that reveal themselves upon a closer scrutiny, but which, in the desire to establish movement and proportion, should properly be at first unheeded.

In completing the drawing, use the crayon and stump in conjunction with charcoal. Pass the crayon over the parts already shaded with charcoal, and then flatten the tone with the paper stump. If stronger dark is needed, use *sauce crayon* with the stump. For the half-tints, drag the stump lightly over from the mass of shadow, as this gives rotundity and projection to the form, and at the same time produces a surface tone of delicate uniformity.

In reviewing before finishing, take the crayon point and emphasise the intense darks, enforce the contour where needed, and give what detail may be required to complete the general impression; for there are emphatic black accents as well as high lights that contribute much to the brilliancy and clarity of drawing. Beware of overdoing the half-tones. If the light come strongly from above, the lower part of the cast will have a comparative half-tone; but only comparatively so; for the more brilliant the head and breast are kept, the slighter the necessity for greatly subduing the lower part, thus preserving the proper balance of light and shade, and giving a consistency and logic to the figure as a whole.

III. DRAWING FROM THE LIVING MODEL.

The first thing to attend to in drawing the figure is the movement. There is a suggestion of motion even in a standing pose; no one stands naturally like a soldier in the ranks. The weight of the body is thrown on one foot, the hip on that side is raised, the shoulder lowered, the spine is curved, the head bent a little to the opposite side. This is what is most natural and easy, but the movement may, of course, vary in every particular. The first thing to do, then, is to note just how, and how much, it varies from the perpendicular.

With a life model it is especially necessary to make a rapid sketch of the general pose, so as to catch the action while the sitter is fresh; for when he tires the muscles relax, the figure becomes limp, and the spirit of the thing is lost. Having once made a satisfactory outline, never alter any of the detail in finishing up because the sitter happens to have changed his attitude.

Draw very lightly a perpendicular line down the middle of your paper, or to one side if the arm is extended. Mark the middle of that line, which will generally be found to correspond nearly with the position of the base of the pelvis. Measure all other distances, of height *on* your perpendicular, of breadth *from* it. Use the length of the head, from crown to chin, as a unit of measure. It is worth while to bear in mind the following normal proportions, although they vary a good deal in different models, and are always thrown out by foreshortening. Still they serve as a canon of proportion to which one can compare the proportions of the model.

Form and Proportions of the Man.—In the average adult man the height of the body, from crown to sole, is from six and a half to seven and a half times the length of the head. From the chin to a little under the nipples is a head; from that to the top of the hips, nearly in a line with the navel, a head; from that to the middle of the thigh, a head; from the middle of the thigh to the knee, a head; and the leg, from the knee to the sole of the foot, is two heads, making a total of seven heads in height. The arm in this average male figure is a little more than three heads long; from shoulder to shoulder is two heads, and from hip to hip one and a half. The hand is about three-fourths of the length of the head; the foot, from heel to toe, a little longer than the head. A horizontal

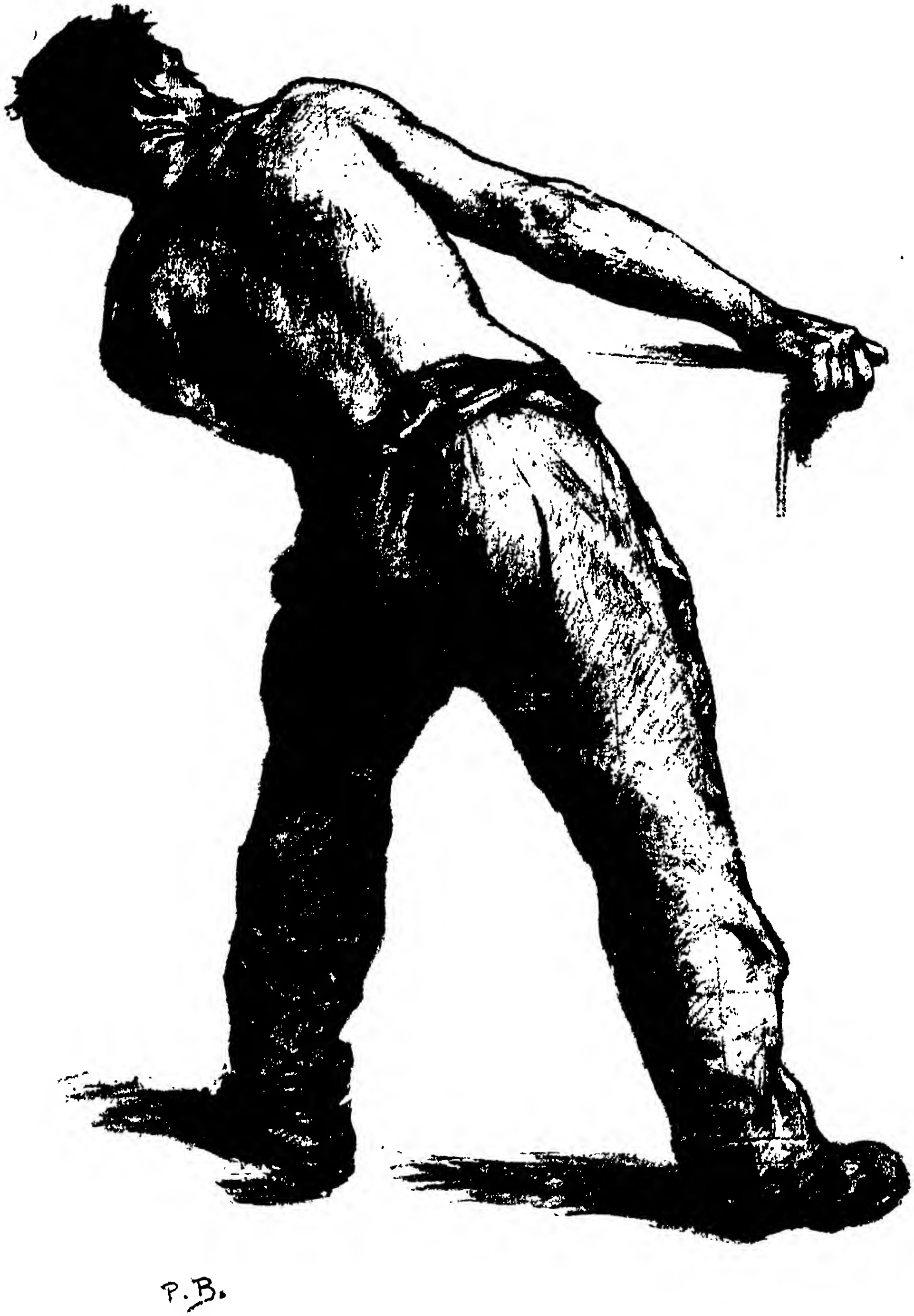

Fig. 6.—Drawing from Life (greatly reduced). Charcoal Study by Paul Baudoin.

The original drawing, it is evident, was "squared off" by the artist. The helpful lines were carried across the paper, and from the top to the bottom, in the usual way, as shown on page 15.

line through the pupils of the eyes divides the head itself into two.

Form and Proportions of the Woman.—The head is larger in proportion to the size of the whole body than the head of the man, although, to give the appearance of grace to the female figure, this fact is often disregarded. The chest is narrower than the man's, the back flatter, the hips wider, and the hands and feet are narrower than those of the man. A purely muscular outline is much less pronounced than in the case of the latter, the outline of the body being much affected by the fleshy covering.

Form and Proportions of the Child.—A purely muscular outline is never found in the body of the child, the parts keeping the contours[1] due to their fleshy covering in the various movements of the body. In very early infancy the height of the child, from crown to heels, is only three and a half times the length of the head. At two years the child generally measures from four to five and one-fourth heads. The neck is short, the shoulders high and narrow, the body long, the back flat, the abdomen full, especially in the region of the pelvis,[2] the arms short, the hands and feet small, the legs short and fleshy.

The "points" of the figure being ascertained by measuring, they are united by lines that indicate the *direction* of the outlines rather than follow them carefully. That is what is meant by "blocking in" a figure. The drawing so blocked in should give the movement and proportions correctly. Still, as errors are always possible, it is well not to fill the paper so completely as to leave no room for corrections. It is also well to avoid a crowded look, as it tempts one unconsciously to lessen the proportions of the head and feet.

In a drawing one-fourth the size of life there should be about two inches to spare at top and bottom. Too much space around the figure, on the other hand, leads one to waste time in finishing extensive backgrounds, when all that is necessary in that way is to give the tone of the background immediately above the figure. The outlines blocked in, the measurements should be gone over again, and the "points" should be determined more exactly than at first. Then sketch in the limits of the principal shadows, and give them a light tint; next, the half-tones; and, as you proceed to model the figure, at the same time refine and clear up the outline.

An ideal division of the head is into four equal parts: (1) from the top of the head to where the hair begins to grow on the forehead; (2) from the hair line on the forehead to the beginning of the nose or to the upper eyelid; (3) the beginning of the nose to the end of it; (4) from the end of the nose to the turning under of the chin. In the male head the lower end of the oval is larger than in the head of the female, and the eyes are above the median line.

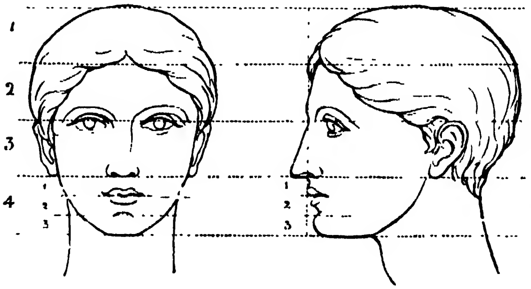

FIG. 7.—PROPORTIONS OF THE HUMAN FACE.

Drawing the Human Eye.—Beginners in drawing often make the eye in profile too long, if not too much in three-quarter view. Study of the diagrams given on page 11 should correct this tendency.

The profile, A, shows the full eye in perspective. The slant of the lid is abrupt. In the three-quarter, B, view, also, the eye is in perspective, the highest point (the centre) having withdrawn from the extreme limit marked in the profile more toward the actual centre. In the full eye, C, the highest point is in the actual centre, there being no foreshortening incident to the other two views. The perpendicular lines in the profile and three-quarter drawings show you how much the eye retreats from view by the respective turns of the head.

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[1] General outlines.

[2] The *pelvis* is the open, bony structure which supports and contains the intestines.

IV. ARTISTIC ANATOMY.

It will help you greatly if, after drawing for a month or two from the model, you begin to study anatomy—not, however, as if you were studying to be a physician. Your concern will be only with what shows on the surface. Minute study of the vital organs and of the smaller muscles not concerned in facial expression is unnecessary. What will be found of immediate use in study from life will be to memorise a canon of proportions, to learn the construction of the skeleton and the action of the joints, and the position and appearance of the principal muscles both in action and repose. This cannot be done in any thorough way without the use of the living model and the aid of an instructor competent to demonstrate on the blackboard the connections of the muscles that the student sees in motion.[1] But some useful advice may be here given, which can be understood if the reader will, whenever he is at a loss to understand it, refer to his own anatomy.

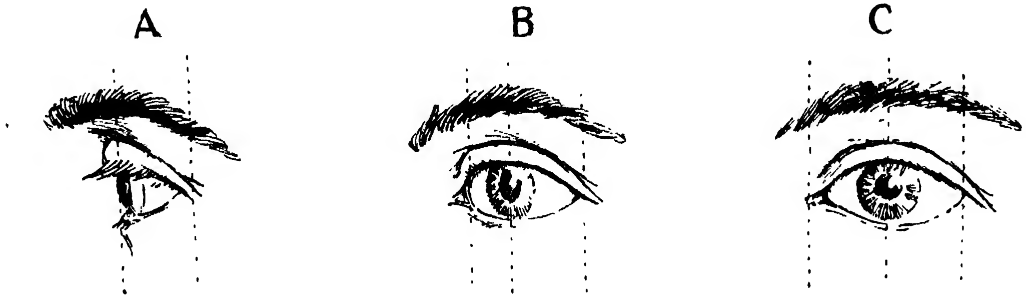

Fig. 8.—Drawing of the Human Eye (see page 10).

We have already given a canon of proportions; but most people vary from this, in being shorter, particularly in the lower limbs. You will perhaps never find a figure which will exactly conform to it. And as soon as the model is put in any pose of action, foreshortening is introduced, and then the canon cannot be applied at all, except in the roughest way. Simply bear in mind that the fork of the legs is a little less than half the height of the body, that the trunk (to the chin) may be divided into four heads, and that other divisions will fall just above the knee, at the calf and the ankles, and you will be enabled to map out the standing figure. You must then correct these proportions carefully, without any regard for ideal beauty, from the actual proportions of the figure in front of you. In time, after you have drawn a great deal, you will probably form an ideal canon of your own, slightly differing from the above; but while studying from the life keep to the facts.

To Study the Bony System properly, a well-hung skeleton is required. But if you would gain at once broad and precise views, we advise you to begin at once to compare the human framework with those of lower vertebrate animals. In the Museum of Natural History you will find a large number of skeletons of birds and beasts admirably mounted. Quick sketches from these, made with an eye to the proportions mainly, and sedulously compared with the human skeleton, will teach you more in a month than you would otherwise learn in a year.

Study from the life should be kept up all the time. As soon as you know a little about the forms and movements of the bones, you will insensibly learn the attachments and play of the principal muscles. But a good teacher will here be of great service. No sort of models or drawings can take his place. As we have said before, though, you can teach yourself a great deal by going through various motions, bringing the muscles, one after another, into prominence. A great many quick sketches should be made of the nude model in action.

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[1] At Mr. Francis Bates' Studio (Augustine Road, Brook Green) the living model poses daily, and Mr. Bates demonstrates the principles of Anatomy.

In Sketching Action, the main thing is to note well the departure from equilibrium. When the body is at rest in a standing position, the line which passes through its centre of gravity passes also through the middle of the head and neck, but not through the legs. It falls in front of them, about through the instep. In a well-built man the chest is the most prominent part, the body is thrown forward on the legs, and the head is held a little back, to balance it. In walking some people carry the body straight and stiff; but it is not a natural or a graceful carriage. It should rather be thrown a little more forward than is customary. In running it is thrown forward still more, and is, except just as the foot reaches the ground, completely out of equilibrium. The archaic Greek sculptors made the mistake of trying to represent running without loss of balance.

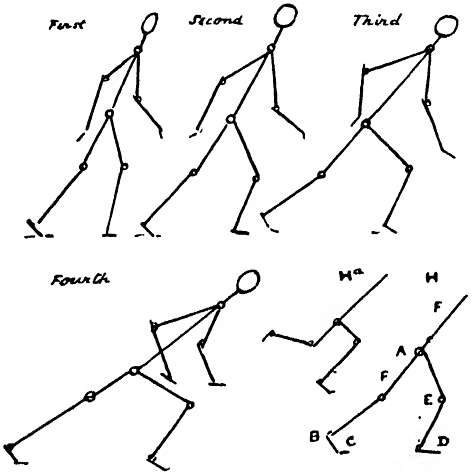

FIG. 9. – ILLUSTRATING DEGREES OF VELOCITY.

The first, second, third, and fourth diagrams show progressive action in walking. In describing a figure in the act of running, the supporting foot should be placed on the ground, as in H*a*. A is the hip; B, the heel of the extended foot; C, the toes, continuing the propelling effort; D, the supporting foot; E, a vertical line showing that the latter is in advance of the hip; F, the line of the back and thigh.

PORTRAITURE IN CRAYON.

THERE are two kinds of crayon or black chalk portraits: (1) the legitimate freehand drawing, which is the only kind that an artist can approve; and (2) the more or less perishable "trade" crayon portrait, which is founded (usually surreptitiously) on a photographic, life-size enlargement of a *carte-de-visite* or "cabinet photograph."

Any person of ordinary intelligence, with a slight knowledge of drawing, may learn to make this latter kind of picture after a little practice. The mode of procedure is very simple.

I. SOLAR ENLARGEMENTS.

A Solar Enlargement from the small photograph is printed rather faintly on heavy drawing paper, which the photographer will, if required, supply mounted on a stretcher, ready for the finishing work of the "artist," who will then cover up indications of the tell-tale photograph, rubbing on *sauce crayon* for the shadows and draperies, and strengthening with the crayon point or side weak parts of the work.

This sort of picture will not last long, if much exposed to the light: the photographic base will gradually fade away, leaving behind the mere wreck of a portrait.

In making an enlarged copy of a photograph or any other print there are other ways of getting the outline than that of drawing it freehand. One way is to trace it from a solar enlargement of the small picture. The outline may be transferred by rubbing the back of the paper with charcoal, putting the charcoal side face downward, and tracing over the outline with a stylus or a hard lead pencil, not bearing too hardly; and, after removing the charcoal surface of the paper from the stretcher and discovering the reproduced outline of the sketch, going over it slightly and very carefully with a small paper stump charged with a little *sauce crayon.*

Another way is to use a magic lantern to throw the picture upon a sheet of paper of the desired size. The outline is traced in the dark with charcoal.

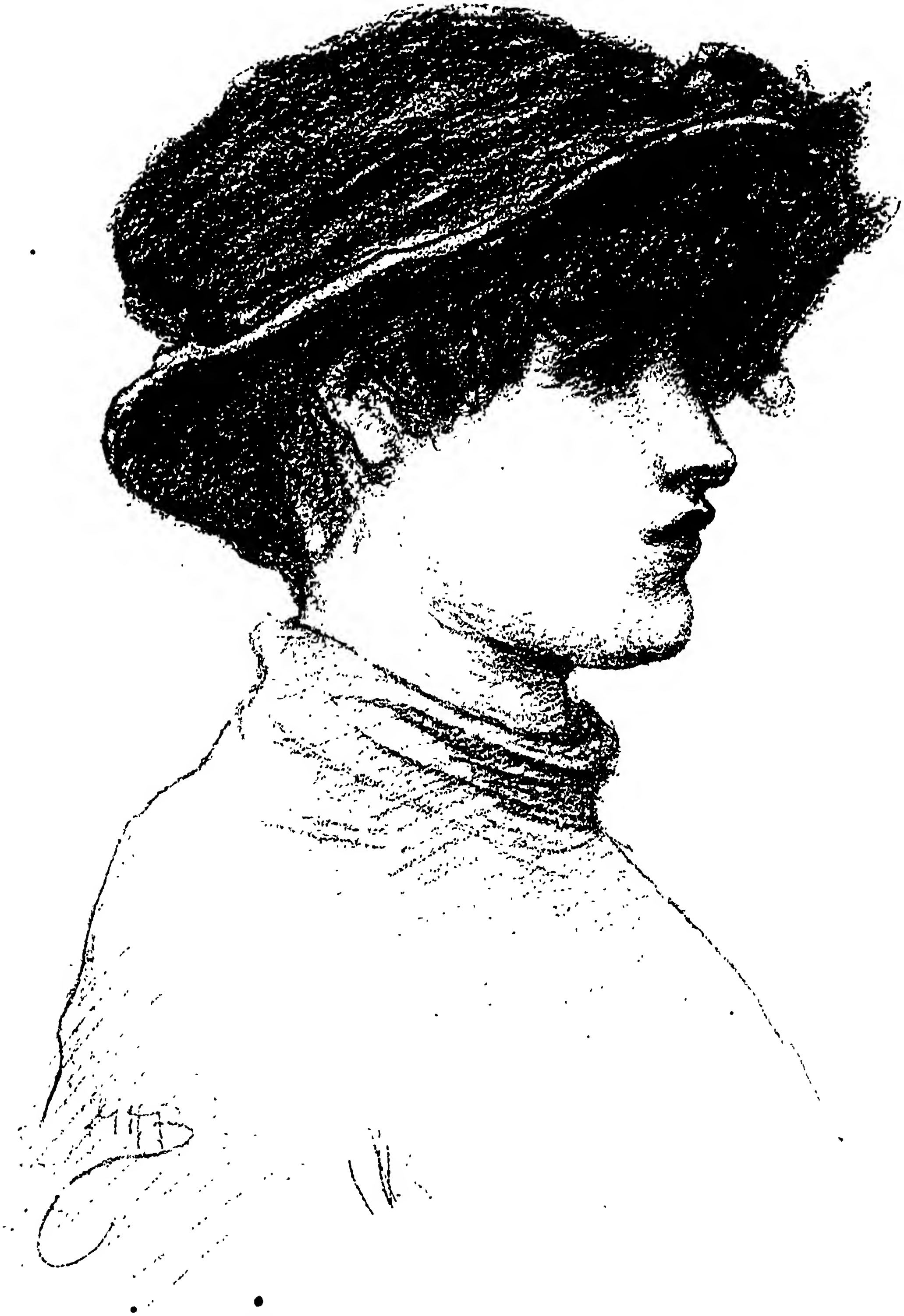

FIG. 10.—CRAYON STUDY, WITHOUT USE OF THE STUMP, BY GEORGE H. BOUGHTON, R.A.

In either case it is advisable to draw the outline upon a piece of wrapping or similarly stout paper, so that any necessary alterations or corrections may be made before the drawing is transferred to the stretcher.

Enlarging by Squares.—The enlargement of a drawing by squares is the method usually employed by artists. A series of squares is carefully drawn across the sketch, and the same number of squares, but twice or thrice or any other number of times larger as may be required, is drawn on the paper which is to hold the enlarged copy. Numbering each line at top and side, it is easy to see in which square each feature comes, and to mark exactly where its outline crosses the bounding lines of the square. One has only to follow these indications on the larger squares to produce with perfect ease a correct enlarged copy of the original. If the enlargement is merely from the size of a small sketch to that of a sheet of letter paper, it will not be necessary actually to draw the squares, for paper cross-ruled in squares smaller and larger may be had at any stationer's of that size. Usually two or more series of squares are produced on the same sheet by the use of heavier lines at intervals. Tracing your sketch upon one sheet, you number off the finer lines that bound the smaller squares. Upon another sheet you number the heavier lines with corresponding numbers, and you produce your enlargement as above. If the worker has had a little practice in drawing, it will often be sufficient to fold the sketch three or four times, and to fold the paper which is to contain the enlargement (and which must be exactly proportioned to the smaller sheet) in corresponding manner. When the papers are flattened out, traces of the foldings will remain, which, in some cases, will be a sufficient guide.

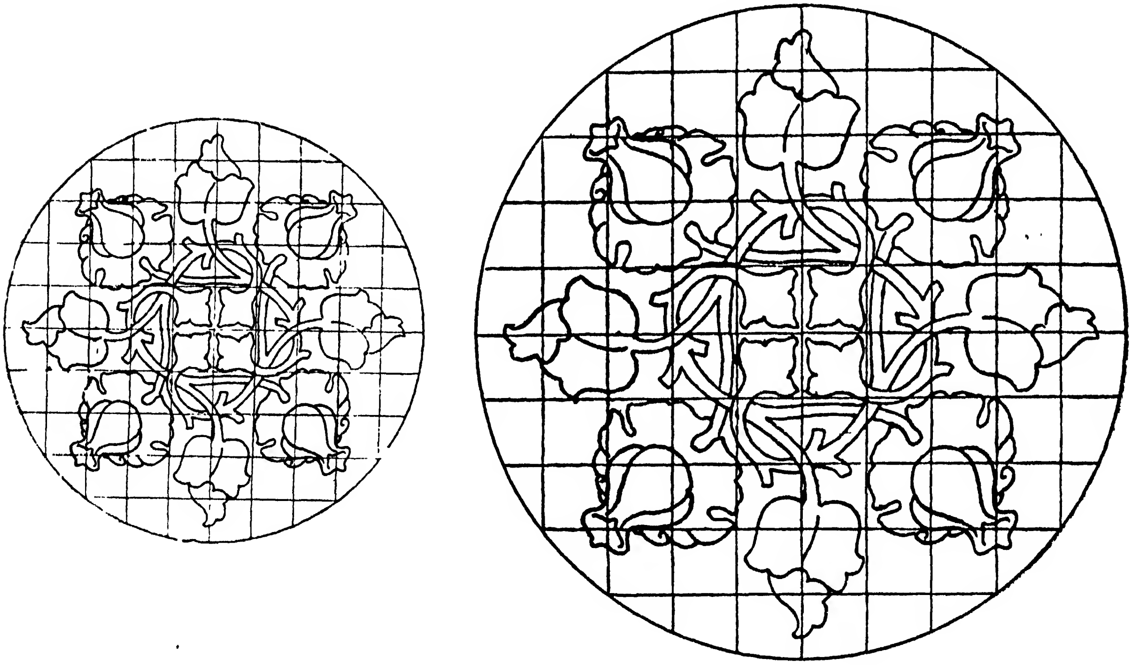

Fig. 11.—Method of Enlarging by Squares.

The same method is used to enlarge to any required size any head, figure, landscape, or other drawing as was used for this simple pattern. When possible, it is best to use a lead pencil in ruling the squares across the copy to be enlarged, so that they may be easily removed afterwards, if desired. They may be measured off with a pair of compasses.

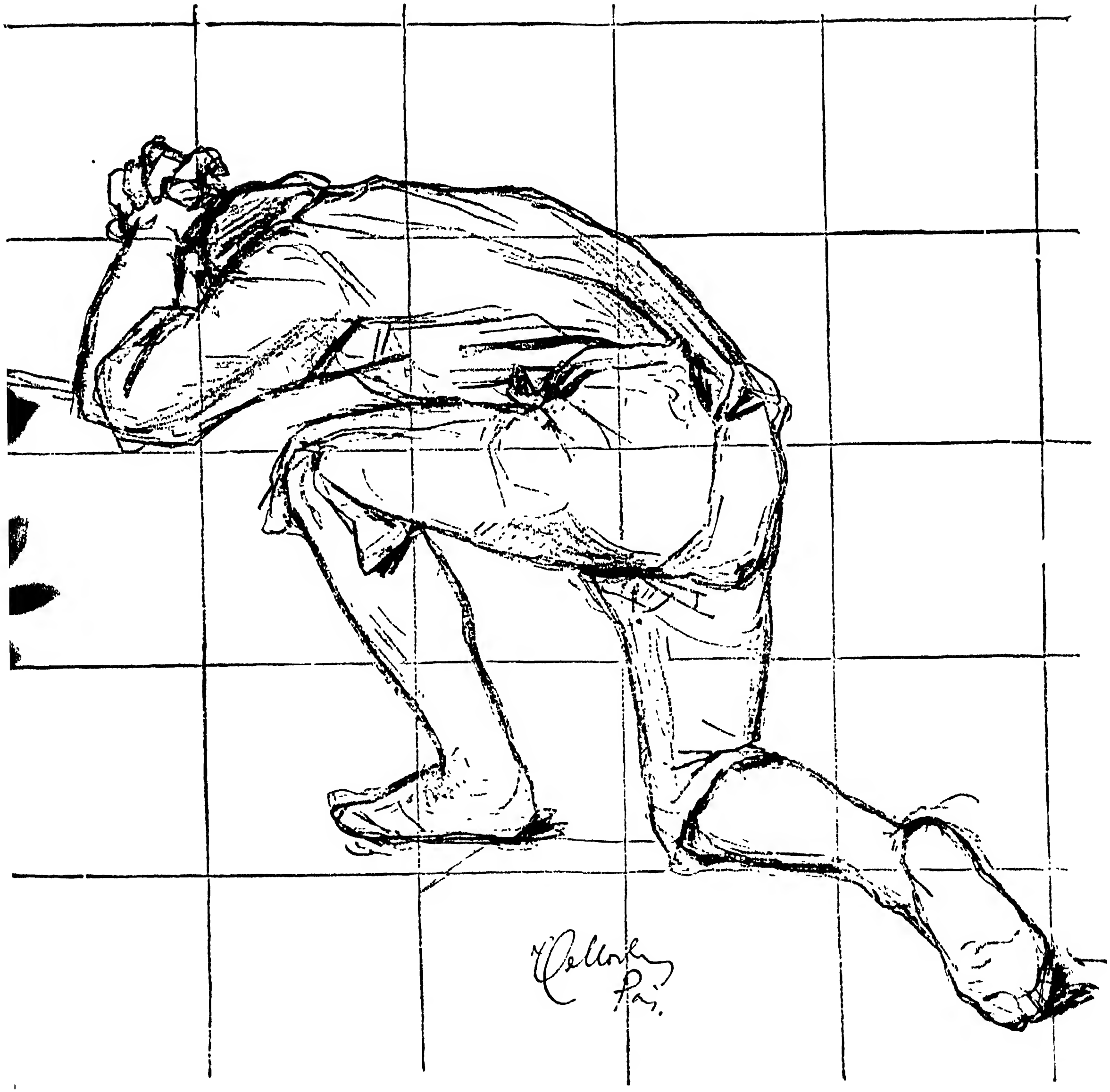

FIG. 12.—EXAMPLE OF "SQUARING OFF" A DRAWING. STUDY BY HENRY MOSLER.

II. THE PORTRAIT FROM LIFE

The true crayon portrait is a very different thing, and if well done is as much entitled to respect, from the artistic point of view, as a portrait in oil colours, water colours, or pastel.

It is absolutely necessary to have a correct drawing to begin with. Make this lightly with charcoal. Block in the proportions much in the way you would in working from the cast, observing the shape of the head at first as a mass. After this, place the features, and be careful to give due regard to the relative space they occupy in the mask (*i.e.* face). In some faces the features are well separated, the eyes wide apart, with considerable distance from the eyes to the mouth, the upper lip being long, or perhaps the nose itself; while in other heads quite the reverse is apparent; the features being grouped closely together, with a large area of the face surrounding them, as may be frequently noticed with very stout people. All these facts and characteristics should be well impressed on your drawing, as important elements of the likeness, before beginning the actual work in crayon; for the charcoal is easily erased when corrections are needed, while to remedy errors in crayon requires much harder rubbing, which roughens the surface of the paper, and is likely to make the drawing smudgy.

Use charcoal in the first blocking in of the shadows in face and hair as well as costume. Be careful, however, not to carry it much beyond the limit where the half-tint merges into the light, as one of the charms of good crayon work is clarity and brilliance; for crayon admits of most delicate grays, and at the same time yields the deepest and richest of blacks. It is this wide range that makes it so effective for portraiture. The fairest blonde is as good a subject as the darkest brunette. The gloss of silk or satin is easily rendered, and the rich and somewhat crumbling line given by the crayon is peculiarly advantageous in giving the various textures incident to portrait work.

After the head is well started in charcoal, the subsequent work upon it must be determined by the method, either of stump or point, which you may select to complete it. If you intend to employ the stump, more charcoal is needed, when laying in the shadows, than if, over the first drawing, you wish to use only the crayon point. Make a flat, even tone with the charcoal, and then pass over this lightly with the paper stump, retaining the form of the shadows. Keep this tone also flat and transparent, which you can easily do by not using too much pressure with the stump. Beginners are apt to rub the paper to an almost shiny condition, destroying its texture, and ruining their work; but no physical effort is necessary.

Do whatever you have to do with deliberation; look long and intelligently at the sitter, and put in at first only the most salient shadows. Forget for a while that there are any details to be considered. Ignore them totally; they will come naturally after the important and main facts are established.

When the charcoal is rubbed in evenly with the stump, it will be appreciably lighter in tone. Pass over these shadows again, using the point of the crayon evenly, as before, with the charcoal, thus deepening still the tone, which prepares it for the final work of carrying over the stump into the lighter shadows and delicate half-tints.

The hair, of course, is treated in the same progressive way; the high lights left nearly white, but always with sufficient half-tint from which to pick out the brightest lights with the bread point used as eraser.

The head is now ready for the observance of all those secondary facts that give variety and closer truthfulness to the modelling. Up to this point only the general planes of construction have been indicated. It is now necessary to look for the emphasis of darks, such as are to be found on the temple, the cheek bone, on the chin and under it. The reflected lights, too, need attention; they may be taken out from the masses of shadow by using a clean stump, and running it along in the direction of the play of light, which perhaps models the jaw, or suggests the form of the chin, as it comes in contact with the shadow

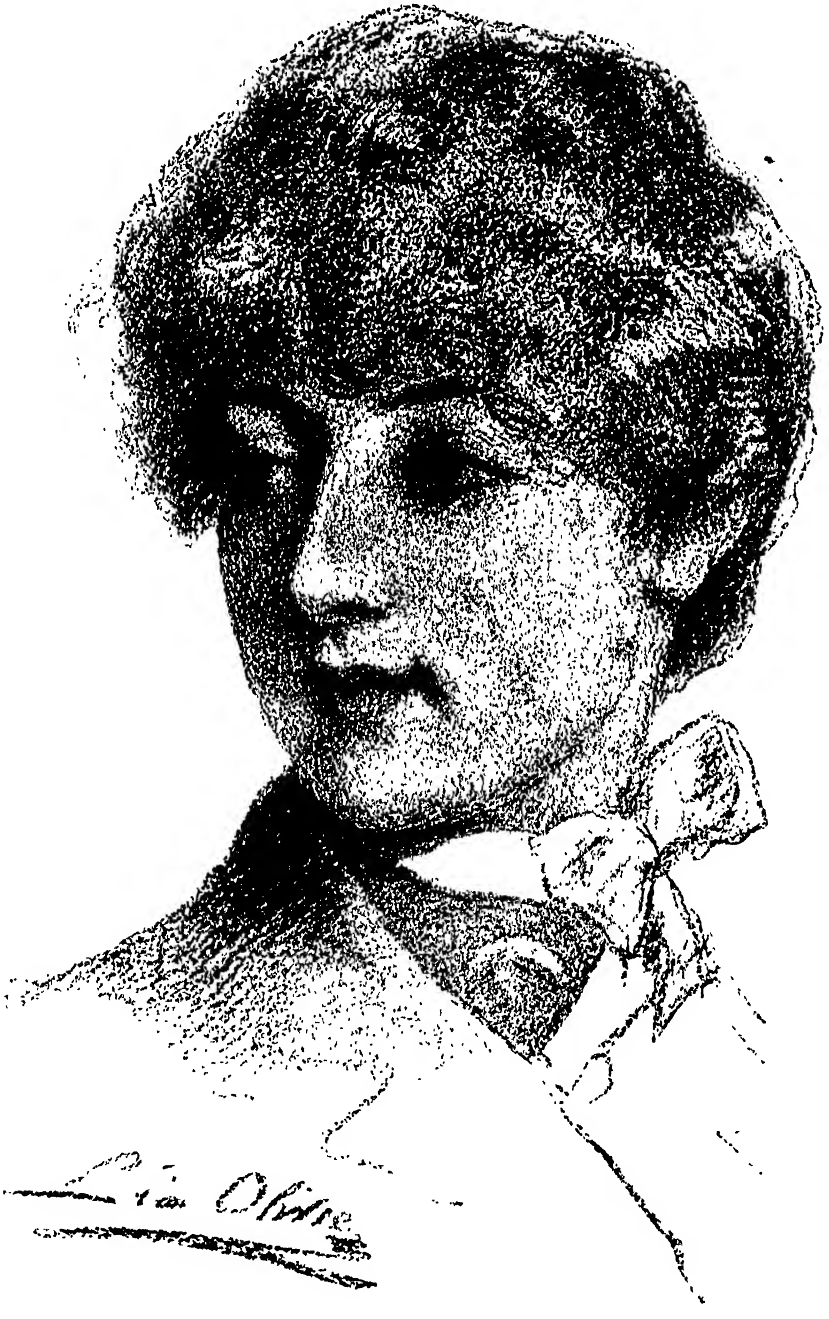

FIG. 13.—"STUMPED" CHARCOAL DRAWING. RETOUCHED WITH CRAYON, BY LEON OLIVIÉ.

cast upon the throat. Wherever, in fact, such reflected light is observed, and where it is not so vivid as to require erasure with bread, the use of a clean stump will be effective.

The final definition of details may be completed with the point. Such accents as are to be found in the corners of the mouth, cartilages of the ear, the precise form of the nostrils—these are best given by using the point with discrimination, only emphasising them as they are in nature, with due regard to their relative "values." One is often led to exaggerate such things with a false idea of making the portrait more effective. Nothing is effective to the critical eye but truth, or the harmonious relation of the parts to the whole, and this can only be achieved by sincere and faithful observation.

The use of the *sauce crayon* should be resorted to where large spaces of black are required in the accessories or garments. Press the stump into this soft, powdered crayon, and apply the *sauce* lightly to the drawing in broad, bold touches. It is often advantageous in the deep, broad shadows of black hair, and will be found especially useful for representing cloth or velvet. Deep blacks are thus secured without that friction of the charcoal and crayon point which tends to injure the surface of the paper. Of course this intensely black medium should only be employed when vigour is required; for ordinary purposes, the charcoal, crayon-point, and stump are all that are needed.

Before finishing a portrait where the stump is used, there should be the slightest prevailing half-tint all over the face, so delicate, however, as to be almost imperceptible. This gives the necessary reserve upon which to make the highest light of telling effect in the modelling. Very little half-tint will suffice for this, and there is danger of exaggerating it unless great care is taken.

Wherever definite accentuation of form is needed, the crayon point is most valuable, for it may be used with more or less of a point, according to the character of line demanded. A fine line of gray, or a broad, strong stroke of black is equally within the possibilities of this medium when variety of contour calls for either; so that with a well-pointed crayon at one end of the porte-crayon and a dull one at the other, the work may go on steadily with the sitter before you. It is a convenient material and one full of interest.

For portraits finished entirely with the point, the less charcoal used in the first blocking in the better, as charcoal is not only somewhat different in tone or colour, but tends to fill up the grain of the paper, so that on coming to work with the crayon there will be a lack of sufficient transparency in the shadows. The crayon point in passing over the texture of the paper leaves little interstices of white in the rough surface untouched by the point itself, and it is this which relieves the shadow from heaviness and opacity. The point works well, too, in the half-tints, when lightly handled, giving a delicate gray tone that is most agreeable.

It should be well understood that when a portrait is to be done with "the point," all rubbing or stumping should be avoided, as the two methods do not work in harmony where large surfaces are treated. The point may be used to advantage, as suggested above, in a stumped drawing, where fine lines and sharp accents are needed; but to employ the stump on the broad planes of a point drawing is a mistake.

In crayon portraits it is as necessary as in any other portrait work to make the forms large and generous. The whole mass of the eye cavities, about which shadows play, should be observed and blocked in at first in their largest effect. The tendency is to restrict these forms until finally little else than the lids and eyebrows is shaded, whereas in reality a half-tint pervades a considerable area around the eye-space, running off and losing itself on the bridge of the nose. See to it also that there is a delicate tone, almost the slightest possible tint, as before recommended, all over the face, for on the light side of the head you will find that the temple, cheek-bone, cartilages of the nose, and modelling about the mouth and chin may be given by an almost imperceptible clearing of this half-tone with bread, or darkening it with stump or point as the case may be. The eye is so sensitive that it takes in the slightest variation of light and shade on the surface of an object, so that it is really surprising how much a little difference between high light and semi-tone will affect the planes of a head. The failure to appreciate this leads many to enforce the half-tints, thus breaking up the breadth and simplicity of their drawing, besides rendering it black and disagreeable in effect. This is one of the blemishes in ordinary crayon portraits. Many faces so treated look as if they had met with an accident in a coal-hole. This is, of course, totally opposed to the characteristics of crayon drawings at their best, which are luminosity and transparency.

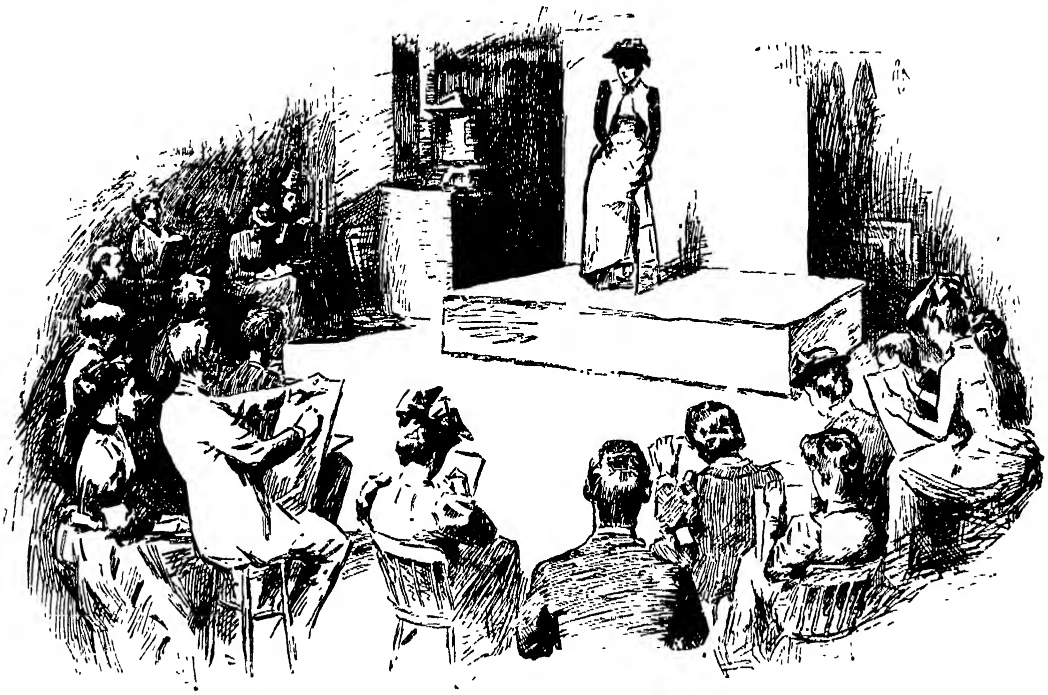

FIG. 14 DRAWING THE DRAPED FIGURE. A STUDENT'S COSTUME SKETCHING CLASS.

After the regular hours of tuition at some of the art schools, some of the students have a sketching class among themselves, one of their number posing for the rest ; sometimes in walking dress, sometimes in fancy costume.

Portraits in crayon are most agreeable when treated somewhat in the manner of water-colours : the background airy and light, and the costume not too realistically finished, but rather left to fade out in some artistic way, allowing the lines at the bottom, if it be a bust portrait, to lead up with a sort of elegance to the more solid modelling about the shoulders and throat, those parts that should receive the most elaboration after the head. It is a good practice in the case of a lady's portrait to carry a long and slender line almost to the waist, showing the graceful curve underneath the bust. In a man's portrait, the lines of the coat from the top button may be made to answer somewhat the same purpose, and fade out irregularly just above the middle. Sometimes the lines in the folds of the waistcoat seen under the open coat are useful in the composition.

These are mere suggestions ; for the arrangement is always a matter of taste largely dependent on the characteristics of the sitter, the stout or the slender demanding different treatment in the way of line, pose of head, and disposition of garment.

LITHOGRAPHY.

I. INTRODUCTORY.

A LITHOGRAPH is the facsimile of a drawing made with a special kind of ink or chalk upon a specially prepared stone. It may be highly artistic or purely commercial. Considered from the first-named standpoint it is an admirable medium for individual autographic expression. During the latter part of the first half of the present century, certainly it was so esteemed by some of the most famous painters of England, France, and Germany. But, after a while, on account of its cheapness, it became the popular medium for commercial work, and for nearly fifty years lithography was virtually abandoned by artists. Within a few years there has been a revival of the art, and to-day it is practised as brilliantly by such painters as Whistler, Legros, and Fantin-Latour, as it ever was by Bonnington, Goya, Delacroix, and Menzel.

"But can drawing upon a ponderous stone be included among the Home Arts?" may be asked. The stone need not be unwieldy. Masterpieces were produced by Delacroix, Mouilleron, and Gavarni, upon stones no bigger than an ordinary brick; and by the modern expedient of drawing on a peculiar kind of *transfer paper*, the artist may dispense with the stone altogether.

II. THE TRANSFER LITHOGRAPH.

With lithographic crayon, or with a pen and lithographic ink (or with both), the artist draws upon a special paper, the surface of which is usually embossed in imitation of the granulated surface of the lithographic stone. Or he may use smooth paper and let the drawing take the grain of whatever slightly raised surface he chooses to draw upon. The transfer lithograph (unlike the drawing made direct upon stone) need not be in reverse. The picture, of course, will appear reversed when transferred to the stone, and the impressions of the picture from this reverse, naturally, will be as the artist drew it on his special paper.

The effect of drawing upon grained lithographic paper—the German lithographers call it "Kornpapier"—is similar to that in fig. 56 on page 47. The grain of the paper, it will be noticed, shows only where it has been touched by the crayon. As we see in this example, the lights may be scratched out with a penknife, and pen or brush touches may be added at pleasure. This, if you please, may be done on the stone itself after the transfer of the drawing. Indeed, it is thus that many lithographic artists put in their most telling effects.

Some critics hold that a crayon lithograph, when dependent for its grain, not on the stone itself but on a paper imitation of it, is not a true lithograph, and ought not to be called such. However this may be, transfer lithography is practised (under the name of lithography) by some famous artists, and so successfully that, in most cases, it would be virtually impossible to prove that their drawings were *not* made upon stone; it is only in passages calling for very delicate handling in reproduction that there is any appreciable loss by the transfer. Some work is improved (*i.e.* strengthened) by it.

III. THE ORDINARY LITHOGRAPH.

The non-affinity of grease and water, under ordinary circumstances, is one of Nature's laws; and upon this law hangs the wonderful art of lithography, in all its simple and complex branches.

Every one knows that, if a surface is covered with an oily or greasy substance and a little water is poured over it, the water will roll into little balls, as quicksilver does when turned out on a table or paper. If the surface is greased in part or in spots, instead of entirely, water will wet only those spots where no grease has been applied.

It is so with a lithographic stone—limestone of fine quality, grained or polished. Instead of applying grease in spots, one writes or draws with a lithographic crayon (which is composed principally of tallow and lampblack). Then a solution of gum-arabic and nitric acid is poured over the stone, not, as may be supposed, to raise the drawing into relief, but to intensify the antipathy of the grease and water. After drying, the surface is wetted with water and a little turpentine, and the substance of the drawing washed carefully off, leaving the stone looking almost as clean as before the drawing was made. But although the body of the crayon has been washed away, the grease has left its spot and still holds to its old dislike for water; and a printer's roller charged with lithographic printing ink passed over the stone while damp brings back the lost drawing.

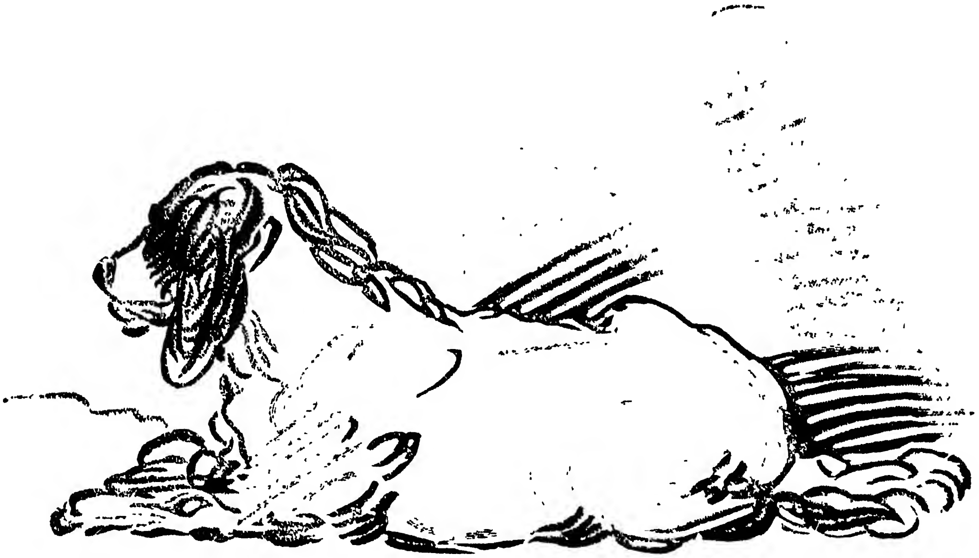

FIG. 15.—FACSIMILE OF A SKETCH ON STONE MADE WITH LITHOGRAPHIC CRAYON, BY GEORGE MORLAND.

A sheet of paper is now laid over the stone and subjected to strong pressure in the printing press; then it is carefully lifted off, bringing with it a reversed facsimile.

The special crayons used in drawing upon stone vary in degrees of hardness, like lead pencils. The greasy composition of the lithographic crayon gives it a tenderer feeling in the fingers than does the hard crayon used in drawing on paper, but in a general way its method of use is about the same. Soft effects are produced with a hard crayon and strong effects with a soft one.

To reinforce the deep and rich effects of the softest crayon the lithographer uses the ink composed of the same substance as the crayon, with which "solid" blacks may be laid on with the brush, and dark masses accented with touches of brush or pen. While the crayon only blackens the surface of the grain, leaving the hollows between it untouched, the ink fills hollows and covers surface grain also, and so produces an even mass of colour. Variations of the inky mass itself may be produced by scraping the surface of the grain with a steel scraper or sharp penknife, and white lines, spots, and masses may be scraped from broad planes of ink or crayon by the same implement.

Corrections of a drawing made on a grained stone are virtually impossible. One who is expert at rapid pencil sketching may apply the same skill to crayon drawing on stone, but where positive accuracy is required, as in figure

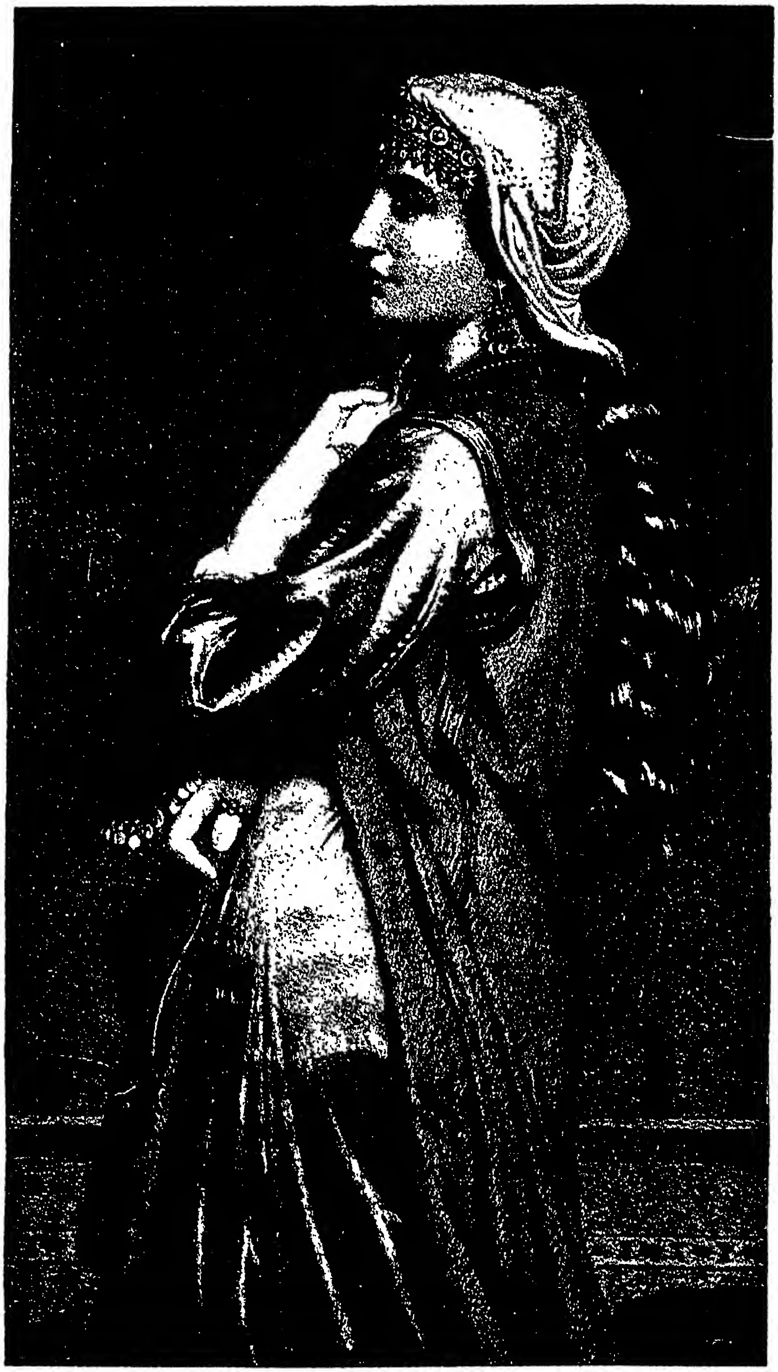

FIG. 16.—FACSIMILE OF A FINISHED DRAWING MADE ON STONE WITH LITHOGRAPHIC CRAYON.

A crayon drawing on stone may be retouched with lithographic ink, applied by either pen or brush, and lights may be scraped out with a sharp knife. The drawing will then have something of the look of fig. 54 or fig. 56. A lithographic drawing may be done entirely in ink.

subjects or portraits, a drawing on paper should be prepared first. This may then be traced with red chalk upon the surface of the stone, thus affording the artist an outline as a guide. As all drawings on stone naturally print reversed, the use of a tracing in reversing a drawing which it is desired to have printed in the same face as the original will be manifest.

The paper to transfer the design may be prepared by scraping a powder of dry, hard red chalk on a sheet of paper and rubbing it to an even surface; it is placed face down on the stone, and any lines indented over it with a hard pencil, or a blunt steel point called a tracing needle, will be found clearly marked in red on the grain of the stone.

In the same fashion, the sketcher upon stone may, if he chooses, fix the masses and proportions of his composition when he has a freehand drawing in contemplation. As grease alone affects the lithographic stone, the red chalk lines wash off when the drawing is etched for printing.

It is well to bear in mind that a touch of a finger, or a fragment of crayon dropped on the stone may lead to a smudge or blot, and so one must take care to preserve the purity of the surface. The point to observe is that every touch of the crayon will tell, and that while it is possible at times to correct a mistake, it is always a difficult operation and rarely fails to leave some trace of itself.

IV. THE CHROMO-LITHOGRAPH.

Lithographs are seldom made by painters in more than a single colour, or a single colour and a tint. At most, three colours—a warm, a cool, and a neutral—would be approved. Beyond that point a colour print would cease to be merely suggestive as to colour, and would appear to be an imitation of one of the regular painting processes.

Such an imitation would be considered inartistic. But chromo-lithography—*i.e.*, lithography in many colours—is by no means to be condemned on that account. It has its own uses, and if employed with discretion may be regarded as one of the most useful of the applied arts. In particular it affords a semi-artistic occupation, peculiarly suited to the tastes and abilities of a large class of young women who desire to make a living. In some art schools chromo-lithography is made a special course of study.

A coloured, or "chromo," lithograph is produced in precisely the same way as the ordinary lithograph we have described. Sometimes as many as twenty different colours are used before a picture is completed, each colour being printed, in its turn, from a different stone.

For the sake of simplicity, let us follow the process of reproducing in five colours a design of mosaics, as the colours in this are distinctly separate.

A tracing of the design is made, transferred to the stone, in the manner already described, and carefully gone over with lithographic drawing ink. Five impressions of this tracing are made, and while the ink is still fresh, a dry powder which adheres is dusted over them. Each impression is then laid face down on a fresh stone, subjected to the pressure of the press, and, when lifted off, leaves the outline of the original tracing, in powder only. The parts of the design that are yellow are drawn in the corresponding parts of the tracing on one of these stones; the parts that are red on another; black, blue, and gray on the others. They then go through with the process with gum and acid, as already explained, and the stone that is prepared for the yellow is inked in with yellow printing ink; the one for red with red ink, and so on. The yellow is then printed on clean sheets of paper, which are allowed to dry, the other colours following in their turn on the same sheets until a complete reproduction of the design is the result.

It can be readily seen that if a little of one colour is lapped over another its tone will be changed, and so a never-ending variety of delicate tints may be obtained.

ETCHING AND DRYPOINT.

I. INTRODUCTORY.

Any one with practice may execute etchings and drypoints equal at least to his pen drawings. As for all work that has to be printed direct, the artist has to draw in reverse. The inconvenience of this, however, is overcome in part by sketching the subject first on paper and, by tracing, transferring the main lines to the plate —copper being usually employed in both cases. The finished plate, in intaglio, has the same general appearance as the copper plate from which your visiting cards are printed.

Although the general appearance of the finished plate in etching and in drypoint is about the same, the two processes are distinct, and different as painting in oil colours and painting in water colours. But they are so frequently used in combination—the drypoint usually supplementing the work of the etching needle—that it may not be amiss to consider the two arts together. First, however, let us set forth clearly the principles of each, separately.

II. ETCHING.

As the derivation of the word[1] tells us, etching means corrosion. The corrosion may be by means of acid on any kind of metal, and even on stone (as in lithography, see page 20); but the qualities of delicacy and strength that are combined in copper render that material superior to any other for the purpose. The drawing is done with a needle, in a holder, which scratches through the "etching ground" (a composition of wax, gum mastic, and bitumen) with which the artist covers the plate before he begins to work. On the completion, or during the progress of the drawing, according to circumstances, he puts the plate into a bath of nitric acid, which eats into those parts of the surface only that have been exposed by the needle scratching away the "etching ground." Successive bitings are usual, so as to vary the strength according to the requirements of different parts of the picture. In a landscape, for instance, the sky, being the lightest part, may be "stopped out" after the first biting of the acid; the middle distance after the second; while the foreground, needing strength, will be exposed to every successive biting.

Finally, the etching ground is removed, and the plate is inked and printed.

III. DRYPOINT.

In drypoint work, you have nothing to do with acid. You have only to draw upon the bare, polished copper, with a sharp steel point, or diamond, just as you would with a fine pen on paper. You may trace the elements of your picture, for this purpose using varnish or etching ground; but in drawing through it, you must be very careful not to scratch the surface of the copper.

One advantage of drypoint over etching is that you can readily see the effect of what you are doing as you go on, without having to wait for a proof. To see how your drawing looks, you need only rub into the lines a little lampblack mixed with lard, which may be easily wiped off.

The drypoint line differs from the etched line in that, whereas the latter is clean-cut by the complete work done by the acid, the drypoint, in furrowing through the copper, raises on both sides of the line a ridge of metal called "the bur." The bur, catching the ink in printing, gives to the line something of the appearance produced by writing in ink on too-absorbent paper. It can, however, be removed with the scraper whenever desired, the lines then having the appearance of lightly etched work. But in a plate executed in pure drypoint, the artist allows the bur to remain at least in parts, for it gives rich and velvety darks, and the general softness of mezzotint. Indeed, in principle, the process of drypoint is that of mezzotint.

Drypoint work is printed on a copper-plate press in the same way as a visiting card.

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[1] The word is a corruption of the Dutch *etsen*. It implies eating away of substance; hence corrosion.

IV. ETCHING AND DRYPOINT COMBINED.

We will now tell in detail how to proceed to make an etching, reinforced by work in drypoint.

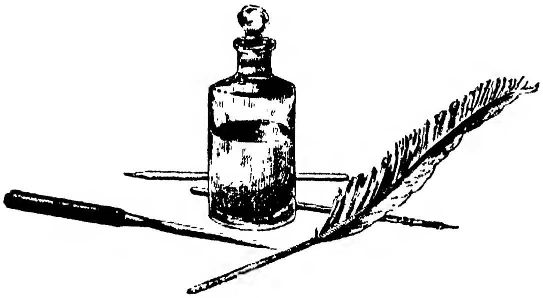

FIG. 17.—ETCHING TOOLS AND ACID.

The materials and implements you will need for your etching are a copper plate, a ball of hard varnish, stopping-out varnish, wax tapers, a hand-vice, etching needles, a flat rubber or gutta-percha basin, a scraper or eraser, a burnisher, an oil-stone, and last, but not least, nitric acid.

The Plate.—Take a copper plate such as is sold for etching, finely ground and brightly polished, ready for use. To try and grind down a piece of hammered copper would be a tedious undertaking, and should you attempt it you would be likely to give up all etching as "a bad job," long before the plate was finished. A plate when entirely clean must present an even, polished surface. Should any scratches appear—which may be caused by rubbing or negligent handling—they may be removed with an oil rubber.

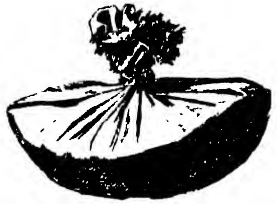

FIG. 18.—VARNISH.

The Oil Rubber (fig. 20) is made of fine, heavy cloth, two inches by ten inches rolled closely together. Use one end, with a little sweet-oil and fine charcoal dust, to repolish the surface of the plate thoroughly, should it be required.

The Pad (fig. 19) calls for a circular piece of pasteboard, a little wadding, and a piece of fine silk. Place the wadding on the pasteboard and cover it with the silk, tying it on the other side; be careful to get the silk on even.

The Hard Varnish (composed of wax and asphaltum) is sold, ready prepared, in small hard balls or cakes. It must be enclosed in a piece of fine, firm silk, which is tied up securely (fig. 18), to prevent the impurities from coming through.

Fasten the plate in the vice (fig. 21), and warm it (fig. 22) over a cool fire or spirit-lamp just enough to melt the hard varnish, which must penetrate through its silk covering when it is rubbed over the warm plate. Test the heat of the plate by passing over it the ball of varnish. The moment it dissolves freely, take the plate off the fire and distribute the hard varnish all over it.

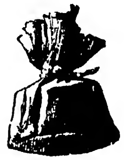

FIG. 19.—THE PAD.

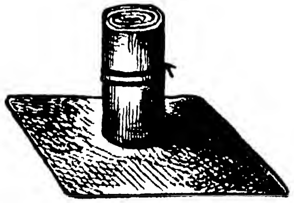

FIG. 20.—THE RUBBER.

Now take the pad and spread out the varnish as evenly as possible. Be very careful not to overheat the plate, as it will burn the varnish, which will then be liable to pull off when exposed to the acid.

To Smoke the Plate is the next step. Hold it up at arm's length and pass a lighted coil of wax taper under it (fig. 23), moving it about continually, again bearing in mind the danger of burning the varnish. The moment it assumes a black, shiny surface it is ready. If you should continue too long there will appear dull, smoky spots. In this case you must not be discouraged; but wipe all off at once, and begin the whole operation over again. You will certainly meet with more success on the second trial. Be careful of dust until the plate is cold.

Transferring the Drawing.—The plate is now ready to receive the drawing, for the transferring of which there are various methods. The simplest way, perhaps, is to make it on a piece of thin paper, rub the back with red chalk, lay this paper on the plate, chalk side downward, and pass gently over the lines again with a pencil.

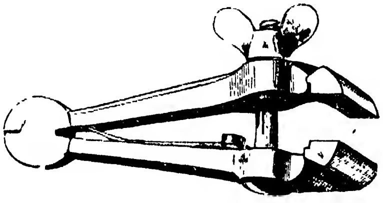
FIG. 21.—THE VICE.

The card-plate engravers use transparent gelatine sheets, on which they trace the outline with an etching needle; into these lines they rub light red or red chalk. The tracing thus prepared, they lay it reversed on the etching ground, rub it down, and so transfer the lines to the plate.

Sharpen your etching needle or point by rubbing it on an oil-stone, with a regular movement—that is, by placing the end of the handle in the palm of the left hand, and revolving it with the right hand in such a manner as to procure an even round point, free from sharp edges, as they would prevent regularity in cutting.

In drawing, press on the point sufficiently to feel that it not only penetrates the varnish, but produces a *slight* incision on the surface of the copper, but not any more. Your point being in a good state, continue with the drawing. Supposing that it is a landscape, draw in the distance in regular layers of lines, close together with as little crossing as possible—only what is actually necessary to express the forms. As you approach the foreground use the needle in a bolder and more irregular manner. You will conceive at once that the distance, which requires but a slight exposure to the acid, can stand very close work, whereas in the foreground, which requires a long exposure, slight spaces between the lines would be liable to be worn off if the acid were a little too strong, and thus produce large spots which will print a heavy black, devoid of transparency.

The Acid Bath.—Having completed the drawing, take a flat, hard rubber basin, or a shallow porcelain vessel such as photographers use. What is known as the C.P. Nitric Acid is the best for the bath. Dilute it with about half water (making it a little weaker in summer and stronger in winter), and place the copper plate in this solution, after having carefully covered the margin with stopping-out varnish.

To lay down rules for the length of time for the exposure to the acid is very difficult. The sky and distance may be etched enough in ten minutes sometimes, and at other times they may require half an hour, and even longer. It depends on the quality of your copper, the exact strength of your acid, the temperature of your room, and other conditions too numerous to mention. The safest way is to use your own judgment when you see the acid working freely, which you can tell by the small bubbles forming on the drawing.

Examine the plate after ten minutes, by taking it out of the acid, dipping it in clean water, drying it carefully with a blotter, and, with a little turpentine, rubbing off a small portion of the least important part of the sky so as to be able to judge of the depth of the lines. Should the depth of the lines not be sufficient, cover over the spot with stopping-out varnish, and expose it again to the acid. If, on the contrary, you are satisfied, cover over all the parts etched sufficiently with the stopping-out varnish (which is simply thick asphaltum dissolved in turpentine). Now expose the plate for the second time, stopping out again

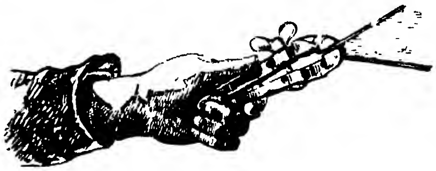
FIG. 22.—HEATING THE PLATE.

when sufficiently etched, leaving the foreground only; and so on, as your subject may require strength and vigour.

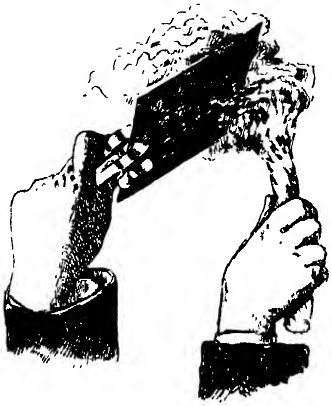

FIG. 23.—SMOKING THE PLATE.

Always prefer to have your acid bite too slowly than too fast, as you will thereby attain better results. Use a feather to brush off the bubbles, while the plate is exposed to the acid, as there will be then less danger of the varnish tearing up.

The acid work being finished, warm your plate and clean off the varnish with turpentine.

Now comes the moment of introducing your drypoint work, for which you can use a strong etching point or needle. Be careful not to abuse the use of the drypoint or fine lines, but place them only where they are essential to produce aerial effects, or in reuniting the acid work. The drypoint used judiciously adds a great deal to the charm of the plate, whereas the abuse of it will give your work a dirty, gray appearance.

The graver, or burin, may also now be used to great advantage in parts where more strength is required. Should there be parts etched too deeply, polish them down with the burnisher.

The drypoint and graver will produce a bur on the plate, which you must remove carefully with the scraper. No bur must remain. You can satisfy yourself on this point by passing your finger over the surface. When the bur is all off, rub the plate over thoroughly with your oil rubber, and it will be ready for printing.

All methods of producing shading by such means as the roulette—a little revolving wheel like a spur, with sharp teeth—or a ruling-machine are considered by good etchers as too mechanical, and are avoided. For etching small plates any soft light will answer; but before you undertake an important plate you should arrange a strainer covered with thin white tissue paper before the window, as it will soften the light and prevent flickering in the lines already drawn.

V. PRINTING.

Before printing see that your plate is perfectly free from any impurities which might remain after the use of the oil rubber. Employ turpentine, or even potash, if you do not succeed with the rubber.

Place the plate on a heated slab or piece of iron, below which a lamp or coal fire has been arranged, and let it become quite warm. Ink it thoroughly, using a good cork for a small plate, and for a larger plate a pad made of linen in preference to a roller, rubbing off the superfluous ink with a rag. Repeat this operation several times, until the slightest line has

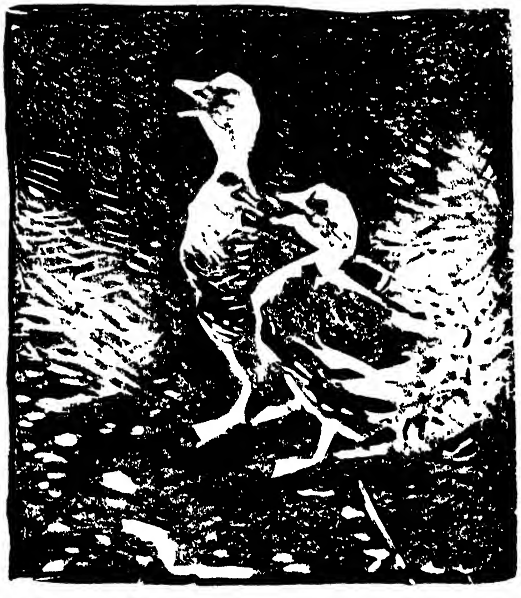

FIG. 24.—APPEARANCE OF AN ETCHED PLATE.

been filled. Put a little whiting on the palm of your hand, and with it polish the light parts very carefully. Now take a piece of tarletan folded in a loose manner, so that you can gently drag it over the parts which you desire strongest. This will draw the ink out of the lines, and give the deep, rich tints or tones to the plate which add so much to the charm of etchings. The foreground especially will benefit by this treatment.

All other methods of producing this shading, such as we have mentioned before, give hard and inartistic effects. They are not considered legitimate.

There is a great variety of papers used in printing etchings. A plain sheet of Whatman paper will answer. It must first be damped. Place a dry sheet between two wet sheets, press it, then brush the side to be printed on with a stiff, clean brush; lay it on the plate which has been placed on the press, and pass it through the rollers. At last, you see the result of all your labour.

If a printing press is not at hand, pour a thin solution of plaster-of-paris over the plate when inked. As soon as the plaster becomes a little dry (which may be facilitated by gently warming it) it will absorb all the ink, equal to the best press, and you consequently obtain the same result, if only a proof is desired.

Many etchers prefer to do their own printing. The novice should hardly attempt so much, unless he happens to have special facilities for such work.

Etchings should be printed with ink specially made for the purpose. If you care to make it yourself, get linseed oil, boiled thick without dryer (which can be bought), and grind it with Frankfort Black; add Burnt Sienna to give a warm tone.

In the printing of etchings it is usually held that the plate should be wiped perfectly clean; but artists often instruct their printers to leave a tone of ink on certain parts that they indicate. This gives somewhat the effect of water-colour work, which is very needful in some pictures—for skies in landscapes, for instance.

If you are inclined to go further into the subject of etching, we refer you to Mr. Robinson's admirable little manual, "The Art of Etching,"[1] which will not only initiate you into the mysteries of laying in, retouching, revarnishing, rebiting, hammering out, and the use of the graver, but will also instruct you in the processes of mezzotint, aquatint, and soft-ground etching, which are a little beyond the scope of the present volume.

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[1] One of Winsor and Newton's shilling handbooks.

ILLUSTRATING.

INTRODUCTORY—PHOTO-ENGRAVING PROCESSES.

MANY art students, who are doubtful as to their ability to earn a living by painting, are confident that they could do very well by illustrating books and working for the picture papers and magazines, if they "could only get a chance." We can assure them that "chance" has very little to do with the matter, and proper equipment, intellectual and technical, has nearly everything to do with it.

It is not enough that you have learned to draw from the cast and the living model. If you aspire to connect yourself with an illustrated newspaper, you must be a ready sketcher as well. Moreover, you must have imagination and talent for composition. Without these latter qualifications, it is impossible ever to attain high rank as an illustrator.

The mere technical acquirements can be got with practice by any draughtsman. Having learned to sketch with the lead pencil and charcoal or crayon, he will not find it difficult to acquire facility with the pen, which is now the medium of expression for about half the work of the everyday illustrator, monochrome (black and white) painting in opaque water-colour washes or in oil colour being the medium for the other half.

Photography has revolutionised the art of illustration. Not very many years ago, the artist's design was made with a lead pencil on the white-coated surface of a boxwood block, which the engraver proceeded to cut away piecemeal, so that not a vestige of the original work remained by which one could tell what part of the printed result was due to the artist and what part to the engraver Except for books of a rather costly kind, wood-engraving is little used now in England or the United States, and when it is employed the artist's design is merely photographed (generally much reduced) upon the boxwood; the original, which is ordinarily the black and white monochrome alluded to above, being left uninjured, as a guide to the engraver.

But photography has done much more than this for modern illustration. The services of the engraver may be dispensed with altogether in the direct reproduction of not only drawings, prints, and paintings in any medium, but in the reproduction of any natural object as well, the conditions of light being favourable. Impressions of whatever can be photographed can be multiplied indefinitely—either by relief or by intaglio printing.

The Reproductive Processes may be classified under two heads: (1) the typographic metal-coated block, etched in relief and printed from the surface, like type; and (2) the etched metal plate from which the printing is done in intaglio—*i.e.*, in the same manner as a visiting card is printed from a copper plate.

By the photogravure (collotype) or etched (and retouched) metal-plate process, any drawing, etching, painting, or natural object may be reproduced with admirable fidelity. But, as for ordinary purposes this process is not available, let us say what is necessary about it before we proceed to consider the typographic metal block, which chiefly concerns the student of illustration.

The objections to the general use of photogravure are expense and the comparative delay both in the production of the plate and the printing from it. The technical results, under favourable conditions, are far superior to those that can be obtained by any other photographic aid to reproduction; but, as the photogravure can neither be printed on the same kind of machine as the letterpress of a book or periodical, nor on any but very expensive paper, its employment, necessarily, must be much restricted. These objections would apply equally to a steel-plate engraving; etching, or mezzotint. The photogravure, by the way, is much like a mezzotint.

Typographic Blocks are a very inexpensive means of reproducing designs for newspaper, book, or magazine illustration. The cost indeed is quite insignificant compared with what used to be paid for the most ordinary wood engraving. They are usually made of zinc mounted on wood to the height of type, so that they may be printed with the letterpress.

The possibility of photo-engraving rests on the simple fact that certain substances, such as bitumen or gelatine, in connection with a chromic salt, are rendered insoluble by the action of light. If a metal plate is covered with a bichromated gelatine solution, and, when dry, exposed to light under a negative, the gelatine will become insoluble in those parts upon which the light has acted—that is, under the lines of the negative. By immersing such an exposed plate in warm water all the soluble gelatine will be washed away, leaving the metal bare. Or the plate may be inked up and immersed in cold water, and the ink removed from the still soluble portions by gentle friction with a soft sponge. In this case the lines of the negative will be reproduced in black ink on a ground of gelatine. Such a plate, with proper treatment, can be etched into high relief. Owing to its simplicity, cheapness, and wide range of application, photo-zincography is the most important of photo-engraving methods.

There are two classes of typographic blocks, the kind in trade parlance called "zincos," and the more expensive (but yet not costly) "half-tone" or Meisenbach blocks. The "zinco" is used for *direct* reproduction of drawings—pen drawings in particular, although, under certain restrictions (see p. 416), the process is available for work in lead pencil, crayon, or charcoal. But no wash effect or graduation of tone (except as represented by lines) must be attempted with it. These may be reproduced by the half-tone process, which, *by the intermediary of a wire screen* (or by cross-hatched lines on the ground-glass slide) between the camera and the object to be photographed, photographs simultaneously on the same negative both the object and the (now almost invisible) screen which holds in suspension in its interstices those particles of half-tone in the picture which would otherwise have been lost. These half-tones are all developed in relief on the swelled gelatine film, and when a cast is taken from the latter and the plate is finally printed, the network of the photographed screen, unless looked at very closely, appears only as a uniform gray tone, rather monotonous and flattening, it is true, but otherwise not objectionable. It may be added that the screen work may be made coarse or fine, according to the printing requirements of the plate and the quality of the paper.

The tendency in magazine and book illustrating is more and more toward the use of the half-tone process, and therefore the student of illustration should acquire facility in the use of the brush, employing monochrome, either in washes of opaque water-colour, or painting in black and white oil colours. The technic of both of these mediums will be fully explained under their proper headings (see pages 57 and 133). We will now consider the subject of pen-and-ink drawing, with special reference to illustration.

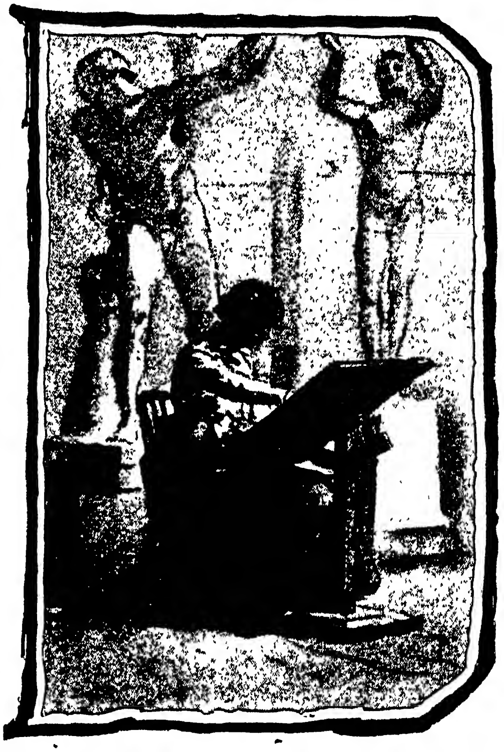


FIG. 24A.—"HALF-TONE" (MEISENBACH) TYPOGRAPHIC BLOCK.

The illustration is reproduced from a wash-drawing twice the present size.

PEN-AND-INK DRAWING.

I. MATERIALS—GENERAL PRINCIPLES.

THE technical conditions for drawing in pen and ink for "process" reproduction are simple.

Use Bristol board, or perfectly smooth white paper.

It is not safe to use ordinary writing ink, for it contains more or less blue. Liquid India ink will do, if perfectly black and free from gloss. A brilliant reproduction, with sharp, regular lines, cannot be expected from a feeble drawing, done with pale ink on rough paper. Pale black or bluish lines will inevitably come out weak or broken and ragged—"rotten" is the technical term. All lines, therefore, should be *perfectly black*— not necessarily coarse or heavy, but indispensably black. Some lines may even be as fine as the diamond point could make them, but they must be purely black. In producing shades of colour it is not always necessary to strengthen the lines. Beautiful gradations are sometimes produced by widening or narrowing the spaces between very fine lines.

Steel pens are always best, making smoother, finer, and more even lines than any others. Gillott's Nos. 170, 290, and 303 are particularly recommended. An ordinary writing pen, however, will serve nearly every purpose, supplemented by a crow-quill for very fine lines.

Drawings should always be made considerably larger than the block required. For the more sketchy styles of work one-third larger will answer. Drawings of the same size as the desired block will sometimes do, but the lines will reproduce somewhat coarser than those of the originals. For all careful and finished work the drawing should never be less than twice the length and twice the breadth of the desired reproduction.

A great saving of time is accomplished by at first laying in the darker masses perfectly black with pen or brush, and afterward getting the gradations by drawing in white lines with the pen, using invariably best Flake White.

Never go over a line the second time until the first is perfectly dry. In using India ink get the highly sized kind. A few drops of prepared ox-gall will improve it.

Keep an ink-eraser and a sharp penknife at hand, in case of need. If by mistake you make a tone too dark, you can correct it by scratching carefully with a sharp knife, which is used also sometimes where a few brilliant lights are needed in a mass of black.

Care upon the following points will save both yourself and the concern that reproduces your work much annoyance and even embarrassment:—

1. Never make drawings in reverse.
2. Make sets of drawings to the same scale whenever possible.
3. Never cross-hatch or reinforce a line, or lighten with white, until the lines previously drawn have become perfectly dry.
4. Take care to leave no pencil marks or any lines, dots, or blotches that are not to come out in the plate; but in removing any of these, be careful not to disturb any of the lines of the drawing.
5. Have a blotting-pad always under the hand. This will keep your copy clean, but it should never be used to take up ink from your drawing.
6. In every case do not fail to leave a margin of half an inch around the drawing, so that it may be tacked to the camera-board without injury.

II. ELEMENTARY PRACTICE.

Learn to draw with as few lines as possible. You must keep these open, and avoid running them very near together in parallels or cross-hatching; otherwise, when your sketch comes to be reduced, as it almost invariably will be in reproduction, you will leave blots or confused splotches of ink that will have no meaning. No other tool will give the "snap" and spirit and the peculiar delicacy that can be got with a pen; but the handling must be firm and flowing. If you have unsteady nerves or a shaky hand you will never make a good pen draughtsman. Lightness and precision of touch are essential, and to acquire these constant practice is necessary, in order to get the hand supple and thoroughly under control.

To acquire firmness of touch begin by making horizontal parallel lines, as in fig. 25. Draw from left to right, being careful to keep the lines an even distance apart and of uniform thickness. A quick, free stroke is necessary, to give the required lightness and evenness of tone.

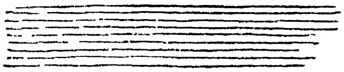
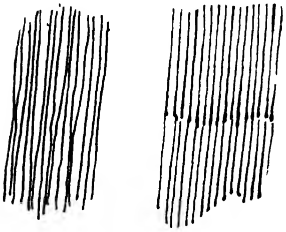


Fig. 25.
Horizontal Parallel Lines, for First Practice.

Next try perpendicular parallel lines. The result at first will be something like what is shown in figs. 26 and 27. In the latter the pen has been allowed to rest too heavily at the end of the line. Try to continue the strokes in the manner shown in fig. 28, cross-hatching them by horizontal lines. In this example the ink has run a little thicker than was intended in the horizontal lines, which consequently have come out a little stronger than they should be.



Figs. 26, 27.
Two Things to Avoid.

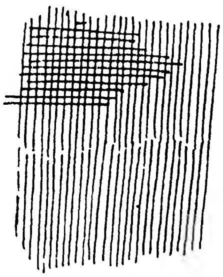


Fig. 28.
Cross-hatching.

Fig. 29 is an example of slanting lines. There will be a tendency to give the strokes a curving effect. You must overcome this, and accustom yourself to make straight, even lines before you attempt curved ones. You may make your strokes up or down, whichever come easier to you; for as your pen is held in a side position, you will not have to contend with resistance from the point.

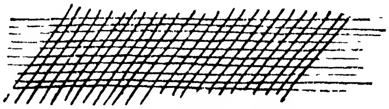


Fig. 29.—Cross-hatching, with Slanting Lines.

When quite sure of your straight lines, try the parallels slightly curved, as in fig. 30. Simple cross-hatching, also in curves, from left to right, is shown in fig. 31. When you wish to deepen a shadow, you may make the third series of lines. Make the strokes as uniform as possible, preserving evenness of tone. You will find it easy to represent undulations or unevenness of surface by means of this curved cross-hatching; but it will not be easy at first to keep the tone uniform.

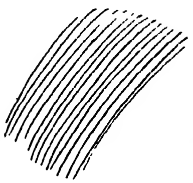


Fig. 30.
Curved Parallel Lines.

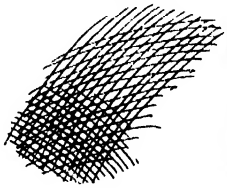


Fig. 31.
The Same, Cross-hatched in Curves.

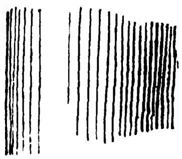


Fig. 32.
Shadow or Depth of Tone, by Perpendicular Lines.

All our attempts at shading, so far, have been by cross-hatching; you will not need much of this in newspaper work. When you do use it, the lines must be kept very open and wide apart. None of our cross-hatching examples, except perhaps figs. 29 or 31, would reproduce satisfactorily in a newspaper, because the drawing would probably have to be reduced at least one-half in reproduction, and that would bring the lines so near together that they would print almost solid black, like the lower right-hand part of fig. 34. But in drawing for high-class weekly publications

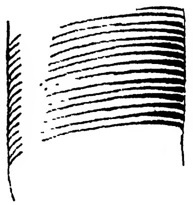


Fig. 33.
Lines suggesting Convexity.

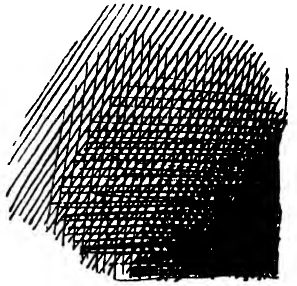


Fig. 34.
Exercise for getting great Depth of Shadow by Cross-hatching.

magazines, or books, you would often proceed in this way.

Another way to express shadow or depth of tone is by thickening the lines and bringing them closer together. In fig. 32 you see how this may be done with perpendicular lines. This is a simple, direct method, which will be found desirable, especially in representing smooth surfaces. In newspaper work it is one of the most effective ways to express the darks.

In fig. 33 a feeling of convexity is given by slightly curving the horizontal lines and grading them from thick strokes out to thin, light ones. If you find it easier, you may reverse the process of grading by beginning with a light stroke, thickening it at the finish. The effect is the important thing to get; but you may be sure that you will not get that until your pen is so completely under control that it will work lightly, firmly and freely.

Fig. 34 is an exercise for obtaining great depth of shadow by cross-hatching. Strive especially for openness and evenness of lines, and in working down to the extreme dark, let the ink dry before crossing with more, so as to avoid a blot.

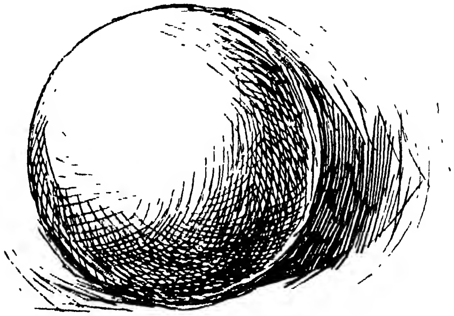


Fig. 35.—Pen-and-Ink Study of a Ball.

Note that the darkest shadow is at the right, outside of the circle.

The practice of drawing a ball in pen and ink is very useful: it gives freedom combined with exactness, and it affords exercise in cross-hatching with curved lines.

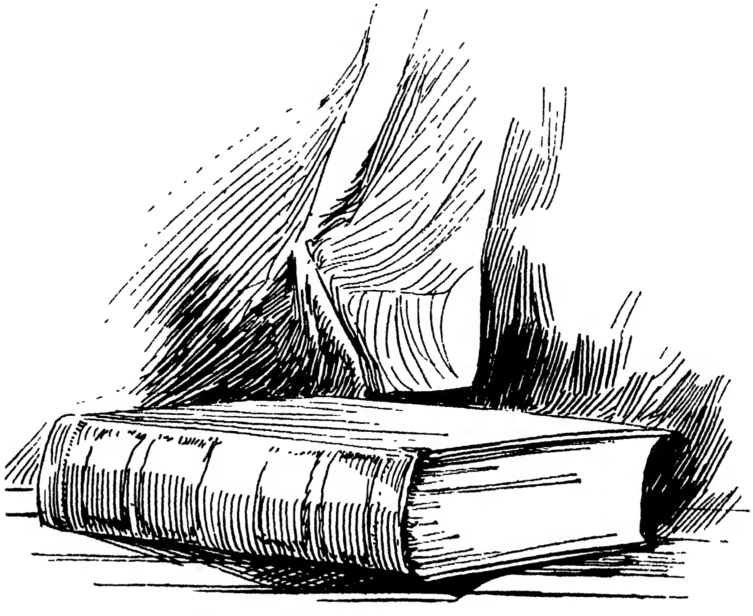


Fig. 36.—A Simple Composition in Pen Drawing.

The shading, behind the book, by means only of parallel lines, suggesting the undulation of the folds of the cloth, gives a better idea of the texture of drapery than could be got by cross-hatching. This drawing is reproduced without reduction, so as to show the execution exactly. It would be more effective reduced by one-third.

No matter how clearly, or with what detail a drawing may present itself to your mind, it is perhaps always best to begin by experimenting with the composition. Let your pencil run freely and loosely in one little sketch after another. When you are finally satisfied with one or another of these schemes, make the little sketch the foundation of a large charcoal drawing, in which you will introduce your effects and accurately place your figures and accessories before beginning the actual illustration which you will submit to the editor for acceptance.

A good plan, in drawing in pen and ink, is to make, first, a rough, strongly marked outline sketch, and place over that a thin, semi-transparent paper on which the complete drawing is to be made. The strong lines of the sketch show through a little—enough to guide a practised hand, but hardly enough to be of use to a beginner. It is, besides, impossible to do like this while using Bristol board, which is the best material for the finished drawing.

If you cannot make a correct sketch without much erasing, sketch the subject on a separate piece of paper, and when correctness is attained, trace it on the paper which is to be used for the pen drawing. In that way the surface of the latter paper will be kept clean and smooth.

The simplest way to make the tracing is to rub over the *back* of the pencil sketch with the pencil used flat, and then, laying it on the clean paper, go over the lines with the sharp point of the pencil, pressing it hard to transfer some of the tint that has been put on the back of the first sketch to the clean sheet.

Begin always with a pencil outline, which can be corrected by the aid of the rubber, for it is not easy to get rid of a false line drawn with the pen. Even the most accomplished draughtsman seldom goes to work at once with the pen, but first makes a careful pencil outline. An HB pencil, well pointed, is best for the preliminary sketch. It should be used for outlining only; all indications of shade, colour, and modelling must be given with the pen. Everything of importance that has a distinct form should be outlined, but it should not be necessary to treat in this way accidental variations of colour or unimportant details. The outline should be a means of saving work, and should not be carried so far as to throw labour away.

Copying reproductions of good pen drawings is useful exercise, after you have formed some style of your own. But beware of the danger into which it may lead you, hurting your originality and keeping from you the free hand so essential to success. There is no harm in studying how certain masters of the pen achieve certain technical results; but first learn at least how to represent simple objects with directness and force.

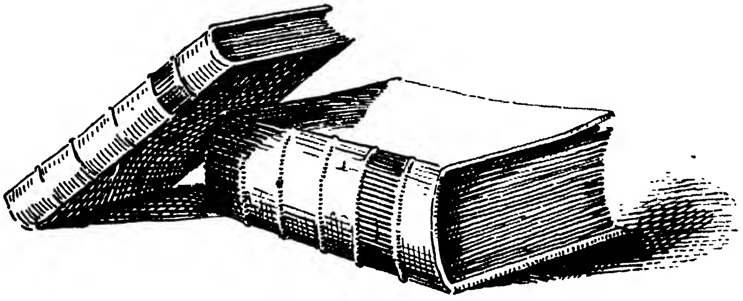


FIG. 37.—PEN-AND-INK DRAWING SHADED BY PARALLEL LINES.

The edges of the shadow lines to the right are "vignetted" (*i.e.* softened by breaking them with Flake White). Artists seldom use a continuous line to represent the outline of an object. Note that the edges of the leaves of these books show no outline at all but in the (erased) preliminary pencil sketch such a line was used by the artist as a guide for his pen work.

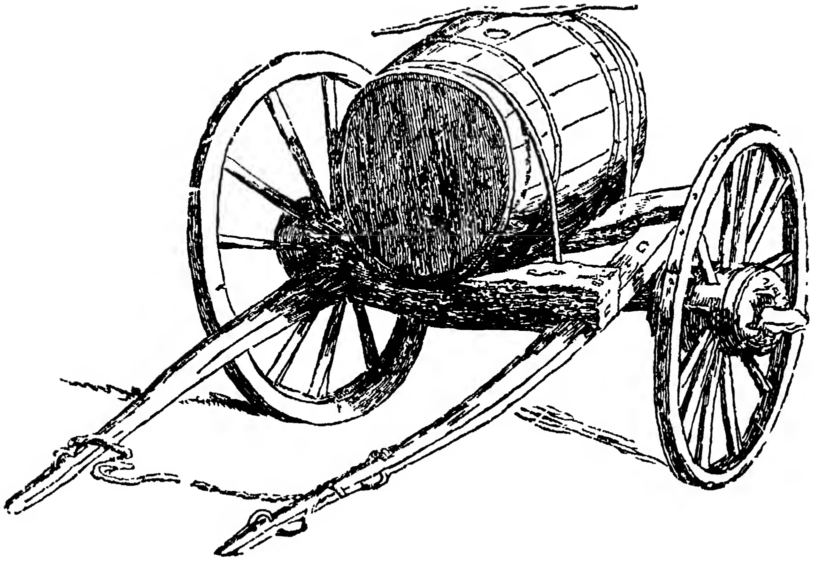


FIG. 38.

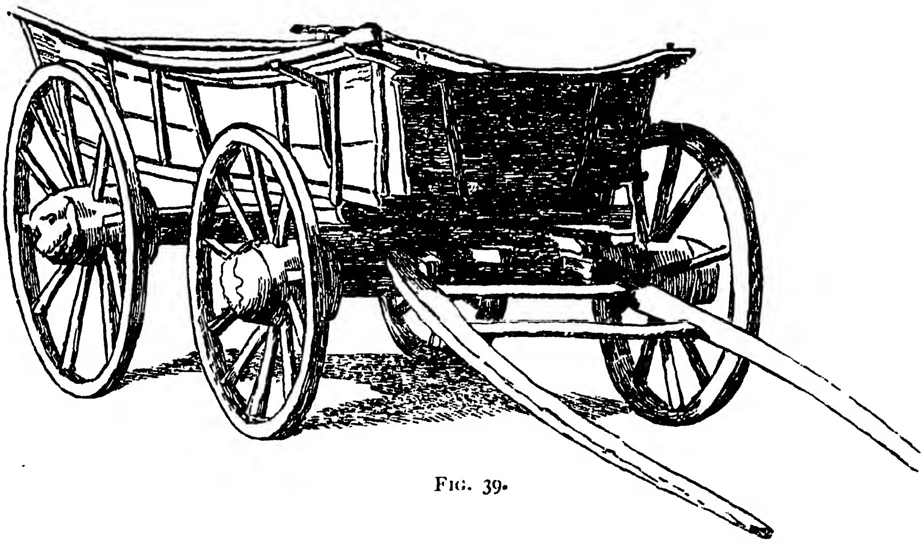


FIG. 39.

EXERCISES FOR SIMPLE PEN-AND-INK SHADING BY PARALLEL LINES.

These examples are reproduced from etchings, but they show very well the proper method of putting in light and shade. One need hardly be told that these objects were drawn in full sunlight.

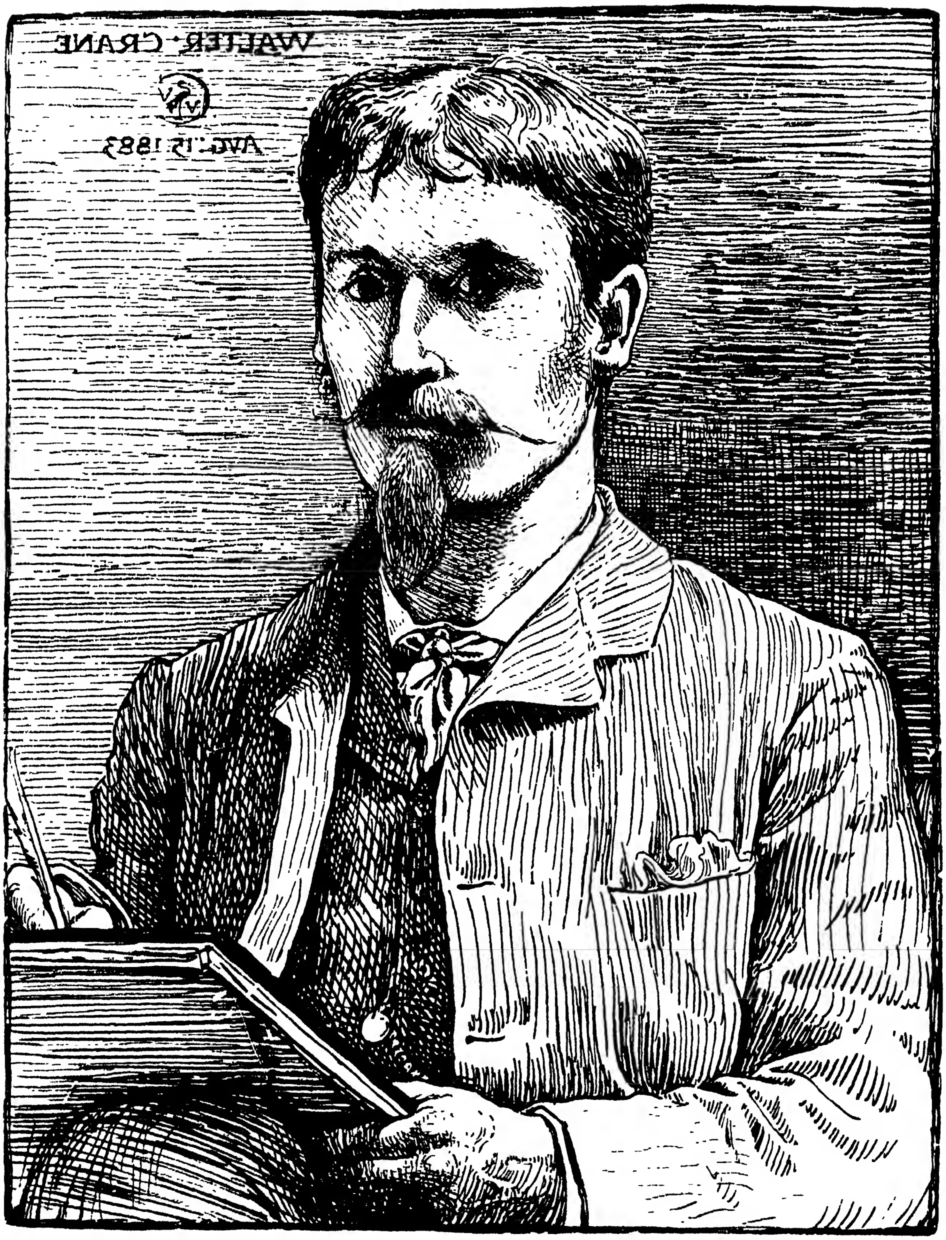


FIG. 40.—PEN-AND-INK DRAWING BY WALTER CRANE. FULL SIZE OF THE ORIGINAL.

This self-portrait of the artist from his reflection in a mirror is characteristically decorative. The horizontal treatment of the background, it will be noticed, gives value to the curved and vertical lines employed in the drawing of the portrait itself. It is repeated only in the foreshortening of the drawing-board. The artist's ingenious device of signing his name in reverse would suggest the story of the mirror even if it were not accounted for by the peculiar lighting.

In studying the work of skilled pen draughtsmen one will notice various devices they have of suggesting what cannot be exactly rendered. Some of these are of great utility. One "trick," known to every engraver, is the method employed to represent "colour." It consists in making the lines more irregular where a strongly vibrating colour is to be represented than when the colour is cool and uniform. A blue dress, for instance, may be shaded with smoothly drawn parallel lines, making an even tint; but if a figure in a red dress appears beside it, then some notion of the difference of colour will be given by making the lines with which the red dress is shaded rather jagged and broken. The reason is that red is the more exciting colour of the two to the eye. The comparatively warm tints of earth and vegetation may frequently with advantage be distinguished in this way from the blues of the distance and the sky.

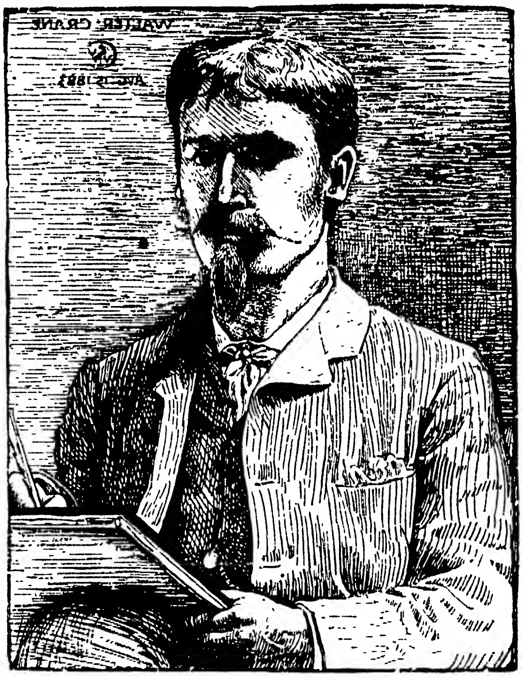


FIG. 41.—PEN-AND-INK DRAWING BY WALTER CRANE. MUCH REDUCED.

It is interesting to note that this portrait, drawn in reverse, suggests the glass negative which is the foundation of every collotype and photogravure plate and every half-tone, photo-zinc, and photo-engraved block.

III. RAPID SKETCHING.

It should be hardly necessary to tell you that if you would succeed as an illustrator, pen or pencil should seldom be out of your hand. Acquire the habit of jotting down instantaneously at least a suggestive memorandum of anything that you see that interests you.

In sketching animals or human figures, the main thing always is to express character and motion, and these are a matter of outline. An action is seldom so slow that a draughtsman can actually follow it with his pencil, but people at work take up every now and then the same position; one can give the general movement roughly at first, and wait for the action to recommence, when the first sketch can be corrected: a third time some details can be added, and so on until a sufficiently good sketch is obtained. It is the same with animals, such as draught horses; but horses or cattle free in the pasture must be followed about as they shift their positions. Even an incomplete sketch of action, if it is good so far as it goes, is very interesting, and one learns much in making it. No practice is more likely to cultivate the memory and to habituate one to perceive at a glance the telling points of a subject. A man soon forms the habit of going over in memory everything of interest immediately after having seen it, and fixing the cardinal points of the impression—a practice very likely to be of use in other ways as well as in sketching.

It often happens that while parts of the body are in motion, others are at rest, or nearly so. A man reading moves only the hands and the head; a man chopping wood, only the upper part of the body, the legs keeping nearly the same position. And so with animals drinking or feeding: one can generally go on in a leisurely way with parts of the sketch, while waiting for an opportunity to proceed with those parts that are in motion. At the least, it is possible to indicate the nature of the background, and its relation to the main subject.

In this way one may come to sketch figures and animals well enough to introduce them in a landscape; but if one's intention be to become a painter of the figure or of animals, thorough practice in sketching from quiet models is necessary before undertaking to render action.

Sketching crowds, scenes at the theatre, at a a fire, processions, conventions, court-house scenes, is the most difficult of all work that comes under the head of rapid sketching. It should be undertaken only after much practice from life in the sketch class. It is for want of such practice that most newspaper sketches of the sort are childishly unlike the reality, even when taken from an instantaneous photograph. The good sketcher should seize the most dramatic moment, when everybody in the crowd is interested in the same occurrence—in the fall of a roof, or the passing by of the hero of the occasion. But he, himself, must not give way to excitement. He must remain a calm observer, and think of the effect which each line will have in his picture, more than of the import of what is happening.

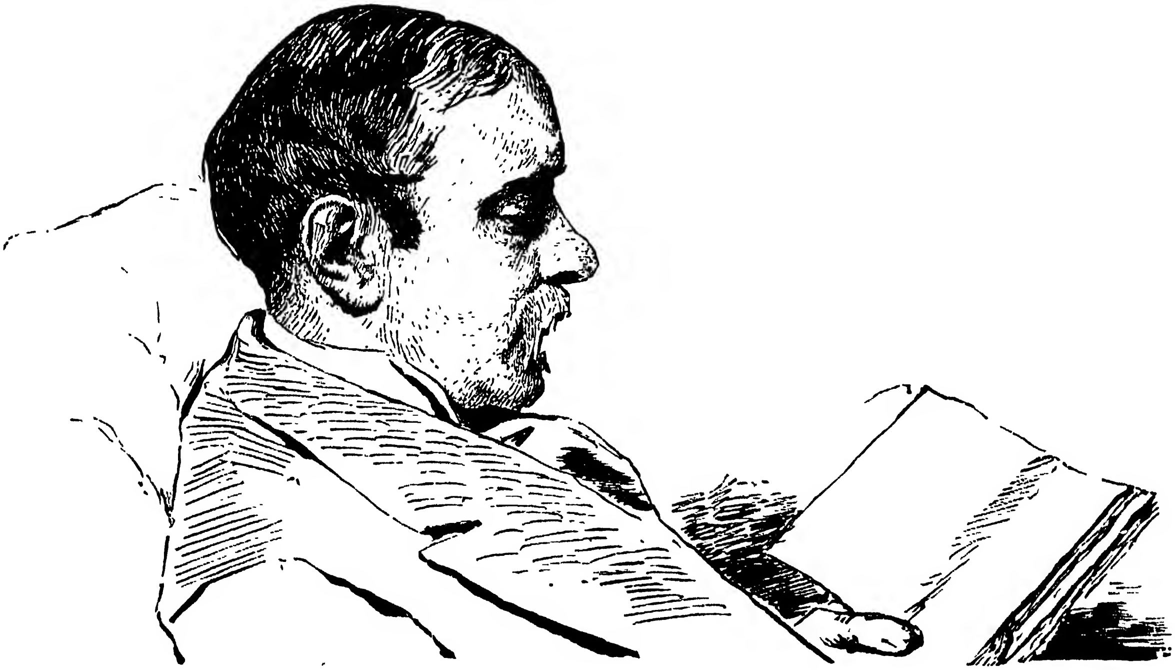


FIG. 42.—PEN-AND-INK SKETCH, BY M. LIPHART.

Practise sketching some member of the family or friend reading, beginning with a profile view, which is by far the easiest. Note the modelling of the ear and its relation to the neck: that it forms part of the face, and is not merely attached to it. Study in connection with this drawing the form of the eye (fig. 8) and the face measurements (fig. 7).

Whenever time can be saved without loss of accuracy by using words or numbers, they should be made use of. If the effect is one of silhouette, in which the principal object is in one tone and the background is in another, the quickest way is to outline the object and indicate by a few lines of shade, or by the

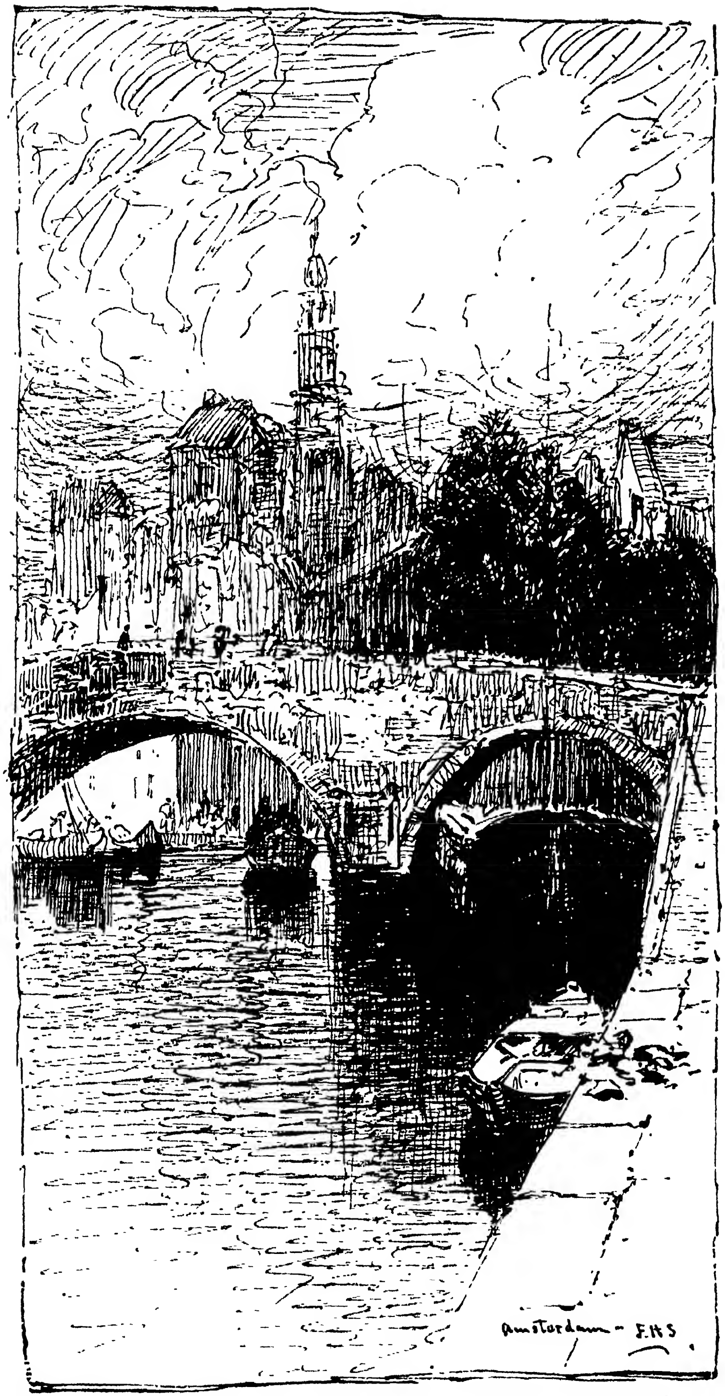


Fig. 43.—Pen-and-Ink Drawing, by F. Hopkinson Smith. From his Water-Colour Painting.

Thoroughly artistic, this is not quite an illustrator's work. A professional illustrator would hardly have been satisfied with the similarity of touch employed for nearly all the textures. Compare the drawing in this respect with Henri Scott's on page 41.

words "dark" and "light," its relation to the background; or if three or four tones are to be noted, the numbers 1, 2, 3, 4, may be used for the brightest, a slightly darker, still darker, and the darkest tones. Actual colours in costumes may be noted by the same memorandum method. The sketch as it is actually made is not for publication, but it should include as many hints as possible of what will go to make an interesting and truly graphic description of the affair.

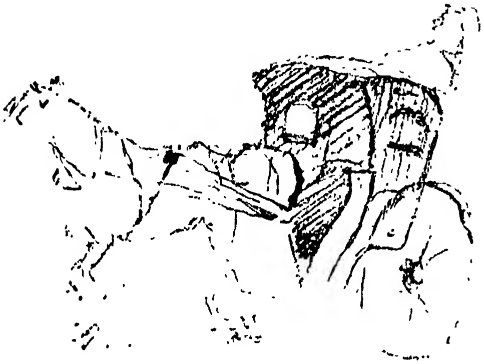


FIG. 44.—MEMORANDUM PENCIL SKETCH OF RAPID MOVEMENT.

A good artist can always beat the man with the camera at this sort of work, because he will include a little of what went before and came after the instant of greatest excitement. His will also be a truer account for us, as we are constituted, though it might not be so if we were beings incapable of doing anything with our impressions beyond receiving and registering them. Often, in this sort of work, what appears in the sketch would hardly give any idea of the event to one who had not seen it. Let it be a regiment marching down Piccadilly, for example; a few lines will give the perspective of the street and of the different companies, as seen from an upper storey window. Rapid marginal sketchers will note down any peculiarity of uniform or equipment. There may be a note as to the colour of the colonel's horse; and then, while everybody around him continues to follow the movement of the soldiers, the sketcher turns to sketch types in the crowd, and the decorations of the principal buildings in the neighbourhood. One uniform is as good for his purpose as a thousand; but every incident on the sidewalk that he can sketch will be likely to be of use in his picture. An old hand at the business will, indeed, secure almost all the information that he wants about the chief centre of interest in advance, and will give nine-tenths of his time, while the thing is actually happening, in observing and recording those little incidents that can neither be foretold nor imagined. It, of course, sometimes happens that "our artist on the spot" has made his entire drawing several days in advance, and puts in, at the last moment, only the weather. It would not do, for instance, to represent a crowd in bright sunshine when the actual crowd may have been hidden under umbrellas. But

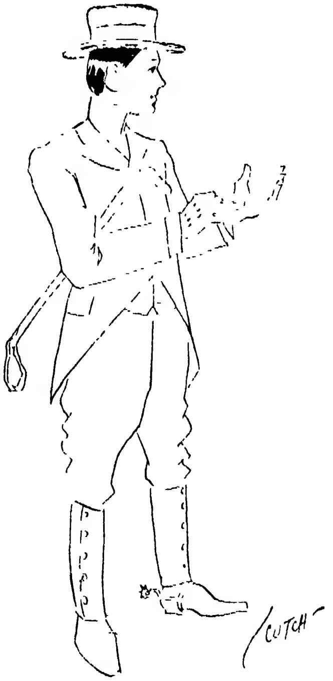


FIG. 45.—THE SIMPLEST FORM OF DRAWING FOR REPRODUCTION.

The original was in lead pencil. Only the *essential* lines of the sketch were "gone over" in pen and ink before the pencil drawing was rubbed out. All "process" work to be used on cheap paper should be drawn in this simple manner, to ensure clear printing.

if the affair is at a distance, information on those points can be had by telegraph. This, however, is a trick of the trade of the professional illustrator ; the amateur sketcher should sketch only what he sees.

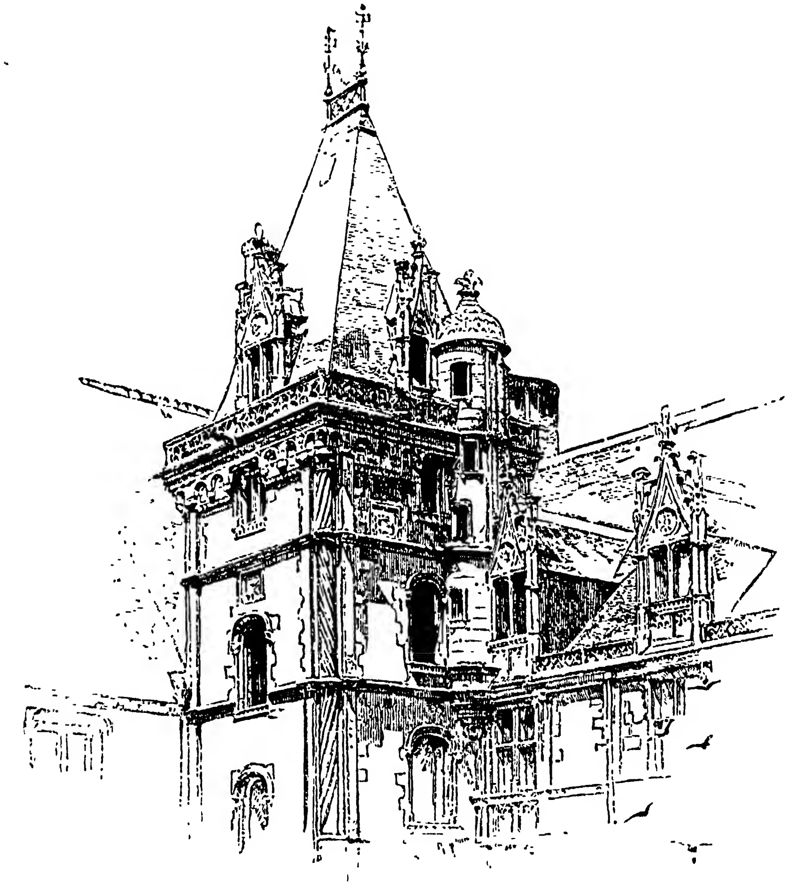


FIG. 46.—ARCHITECTURAL DRAWING IN PEN AND INK.

The original (which was double the present size) was very lightly sketched in lead pencil and carefully worked up at leisure in pen and ink. Note the simplicity, yet variety of technic, the careful work of artist and illustrator combined, in contrast to the summary work of the artist alone, as seen in the rapid pen sketch, without any pencil foundation, on page 39.

IV. COMPOSITION.

Supposing that you have received a commission to illustrate a poem or a story, your first step naturally will be to select an interesting situation or character from the text and make a rough sketch in charcoal of your idea. Do not be satisfied with merely representing two persons looking vaguely at each other and doing nothing, as many so-called illustrations do nowadays, depending on tacking on to the picture a line or two from the text to tell the reader what the characters are supposed to be saying or thinking about. An illustration should illustrate—it should at least be suggestive and stimulating. Many persons buy a magazine only after looking over the pictures, and finding them so interesting that they are curious to read the story connecting them with the text.

A good, all-round illustrator should be able to compose pictures from his imagination, with the assistance of photographs, book and magazine illustrations and written descriptions. One must not suppose that an illustrator of boys' stories of adventure penetrates an Indian jungle when he is commissioned to embellish "The Boy Spy among the Afridis," or that he goes to the North Pole when he illustrates "The Boy Captain in the Polar Seas!"

Acquaint yourself with the character of Nature's manifestations. Almost any artist of fair ability can go to a blackboard and show you with a few lines the characteristic difference between a classical face and one of less symmetry, the constructive principles of the head of a negro, a German, an Irishman and an Italian. A landscape artist will show you, with a few flowing lines, the contour of the foliage of an elm, a pine, an oak, or a cedar, and the ramifications of their trunks and limbs. An animal painter can show you, by the mere placing of the legs, head, and tail, upon the body, the great difference between the forms of the horse, the cow, the dog, and the cat. Let a man who has studied architecture, or even perhaps read on the subject a text-book or two, vie with one unfamiliar with the subject in endeavouring to let a few lines stand for a Corinthian column, Moorish arch, Gothic tracery, an Oriental pagoda, and you will see how much more economically the man who understands the component parts of these features of architecture will suggest them, how much more direct his work will be than that of the man who flounders around with his piece of chalk trying to recall, as he works, the forms with which he is not thoroughly familiar.

When there are to be several illustrations to an article, one may choose the minor incidents for portrayal; but when there is to be only one, that one should represent the key to the situation; or else the drawing should express in a general manner the ruling idea of the story.

Above all other things, the work of an illustrator should be truthful, or at least it should seem to be. It is often some little characteristic touch in an illustration that gives it its special value as such: the pattern on a piece of lace, for instance; or the soiled finger-marks near the knob of a door; or the knottiness and leathery texture of an old man's hand.

One great difficulty to be surmounted by the novice is the fear of hiding the principal figure. Never be afraid of hiding one thing by another. Often the story is told far better and more interestingly by the accessory than by the main figures. A very good example of this is in a certain illustration, "A Street Accident." You see the backs of the curious crowd that has gathered around the fallen man; you feel that they are intently regarding his prostrate form, of which nothing is shown in the picture but the feet; a little street Arab is beckoning to an unseen boy up the street, and from an upper window leans a fat old woman with folded arms and pipe in mouth, calmly and impassively gazing down upon the excited group. This is

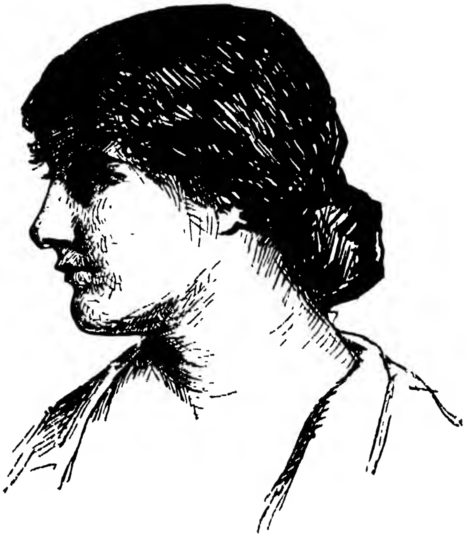


FIG. 47. PEN-AND-INK ILLUSTRATION.

The original drawing was twice this size. The pen work is reinforced by brushwork in the hair and eyebrow.

art. If the story is too clearly told, the eye is satisfied at once, and ceases to busy itself with the drawing: interest in it is lost instead of being stimulated by it.

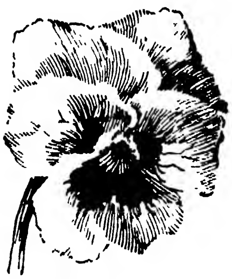


FIG. 48.—EXAMPLE OF COLOUR AND TEXTURE.

The same principle may be applied, in an opposite direction, in the matter of a background. To impart to your figure a vital, breathing interest, detail the background carefully and accurately, keeping at the same time the sense of atmosphere and distance.

A youth once went to one of our best-known illustrators for advice, and brought a drawing for his criticism. The poor fellow was in despair; he "could not make the figures stand out." He had generalised and softened the background until it was hardly more than a blur, and had emphasised the figures as much as possible; yet he could not give them relief.

The artist regarded the drawing for awhile in silence. At last he said: "Suppose you reverse your process. Detail your background so accurately and clearly that the mind is satisfied and can devote itself to the figures." The advice was followed, and it was strange to see how the figures stood out into clearness and reality. The whole art seems to lie in the successful working of reversals. For instance, in order to produce a feeling of motion, you must never force the action: let the feeling proceed from the contrast to something at rest.

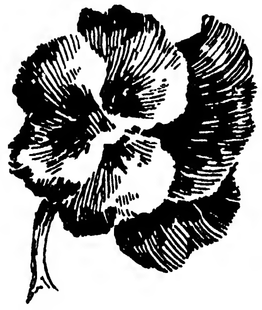


FIG. 49 EXAMPLE OF COLOUR AND TEXTURE.

When your composition is arranged satisfactorily, make drawings from life for the figures, with studies for the surroundings and accessories, also from nature. When all is

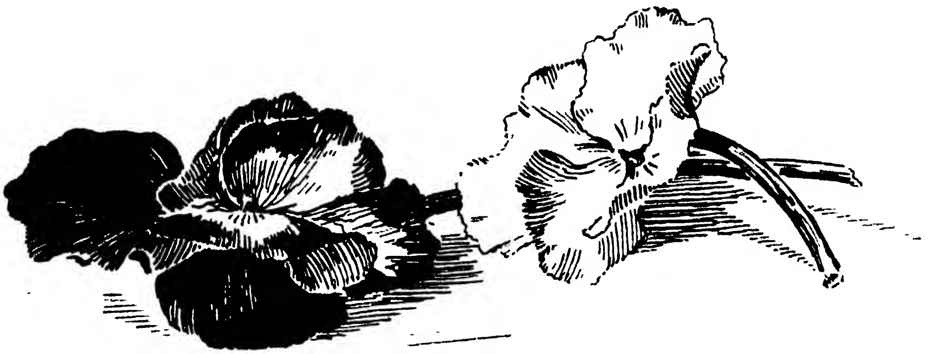


FIG. 50.—EXAMPLE OF ARTISTIC FLOWER DRAWING IN PEN AND INK, BY E. M. HALLOWELL.

This and the two examples above it illustrate how much may be done in simple black and white to differentiate colour and texture even in so difficult a subject as a simple garden flower.

complete, revise your work, to be sure that the lights and shadows are well balanced, and the lines as graceful and harmonious as the subject will permit.

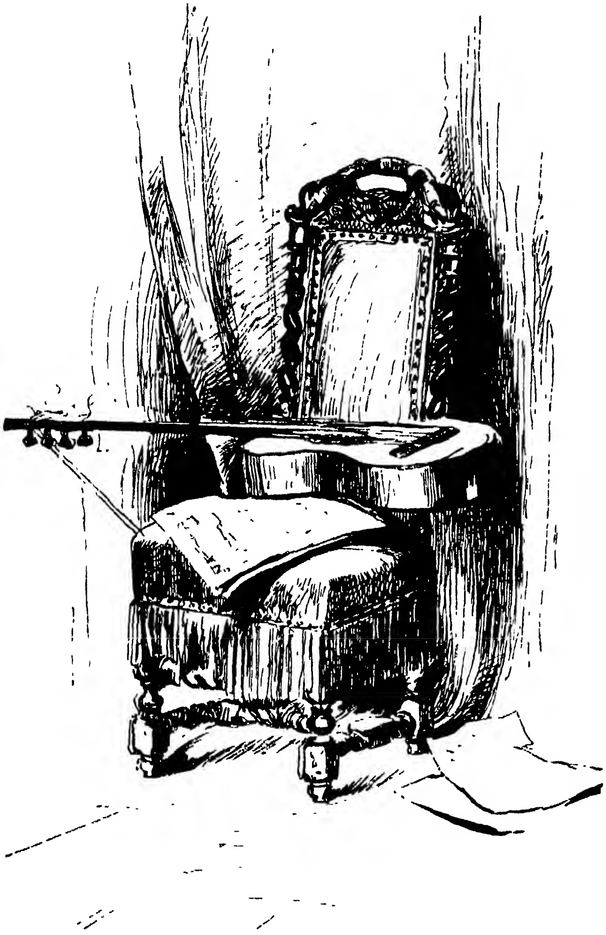


FIG. 51.—PEN-AND-INK STUDY OF STILL LIFE.

V. TIME-SAVING AND MECHANICAL DEVICES.

The Silver Print, or photographic enlargement, is a labour-saving device very serviceable in making pen drawings for catalogue and similar trade purposes. It is no less valuable for rapidly reproducing for newspapers sketches, or drawings from photographs, of persons and of scenes having merely a transient or news interest. The silver print is made on plain (*i.e.* albumenised) paper, so that it can be readily drawn upon with pen and ink. The photographic enlargement is rather faintly printed, and is generally made at least twice the size of the desired block, not only that the hatched and cross-hatched shading may not appear too coarse in the reproduction, but because it allows the draughtsman to work with greater freedom than would otherwise be possible.

Having secured with the pen the outlines needed and indicated the principal shadows—that is, having got out of the silver print as much as he needs of it—he bleaches out the photograph. This is a simple and very rapid process. He floats over the drawing a preparation made by dissolving one ounce of corrosive sublimate (bichloride of mercury) in half a pint of alcohol and half a pint of water, and the photograph underneath disappears as if by magic. When the paper is dry, it is dusted, and then the drawing is usually carried further; for while it was obscured by the photograph underneath it, it was difficult to tell just how much of the effect was due to the photograph and how much to the artist's own work.

When you give the photographer the photograph to enlarge for you, tell him to make an ordinary negative from it and give you a print of it upon "plain paper." You would do well to let him also mount it for you on cardboard, for if it is not mounted properly it will curl up so that it will be difficult for you to draw upon it.

Brush Work.—The most artistic adjunct to the pen, and one to the use of which no exception can be taken, is the brush. For putting in large spaces of solid black it is indispensable, and for very large work it is useful in outline. The quality of a line drawn with the brush is very pleasing; it lacks the hard edges of the pen line, but is nevertheless very definite. When working for a very great reduction, the breadth of the line is important, and any line easily produced by the pen may come down too narrow to be effective. But the principal use of the brush is in bold decorative work, in which black masses are contrasted with masses of white and a few tints. For this purpose it is best to use indelible black ink, over which ornament may be drawn in Chinese White without danger of washing up the black, as might occur with ordinary India ink.

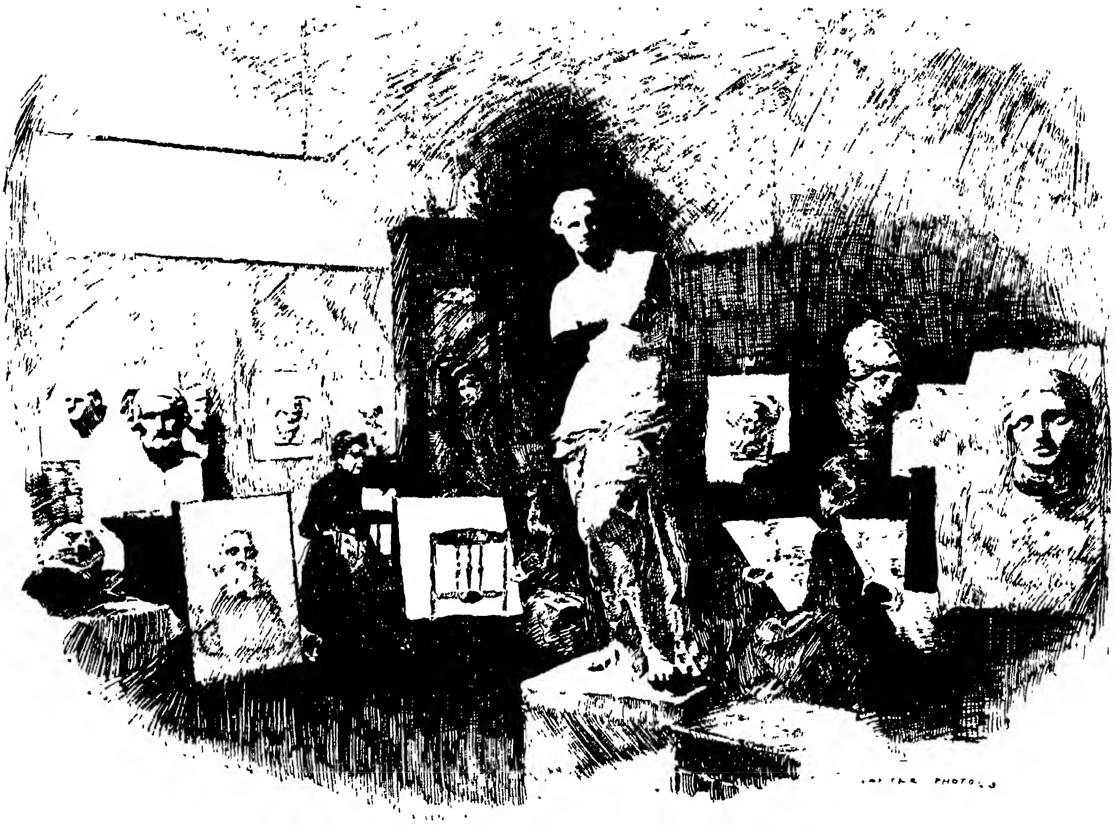


FIG. 52.—MISUSE OF THE PHOTOGRAPH AS AN AID IN PEN-AND-INK DRAWING.

This (reduced) drawing over a silver print illustrates the pitfalls of the method unless practised by one who understands the artistic limitations of this time-saving device. The novice, having no idea of what is meant by concentration of effect, has undertaken to trace every detail in the photograph over which he has worked. The result, naturally, is a hopeless jumble of "values." Note, for example, the dazzling white of the paper-covered drawing-board on the chair, and the childish exaggeration of the students' improvised paper palettes for their *sauce crayon* seen to the left of the two drawing-boards near the bottom right-hand corner of the picture.

The Lithographic Crayon, next to the brush, is to be commended. It is more convenient to use with pen work than charcoal, and it can be used on a smaller scale. The paper may *not* be Bristol board, or any other kind with a smooth surface. It must have a "tooth." For experimenting, ordinary charcoal paper will do very well; egg-shell paper will also be found to be very good, and "O.W.," or Whatman paper is excellent.

Our illustration of the boy piping to the bird (see p. 46) was drawn with crayon upon rough paper, and reinforced by pen and ink. It is greatly reduced: the original drawing was as large as this page.

Spatter Work is sometimes used with striking effect in "process" illustration. The manner of producing it is very simple: Barely cover the bottom of a saucer with India ink; then dip a tooth-brush into the ink, and holding it down over your paper, run the edge of a penknife back and forth across the bristles. This will quickly cover the paper with small, irregular blots of ink, and the tint thus obtained may be made either dark or light at pleasure. The parts of the drawing that are not to be covered must be protected by an overlay cut out of thin paper; but this can be satisfactorily done only in the case of large and simple forms, such as those of night effects or a snowy landscape under a cloudy sky. The overlays may be pinned on the Bristol board.

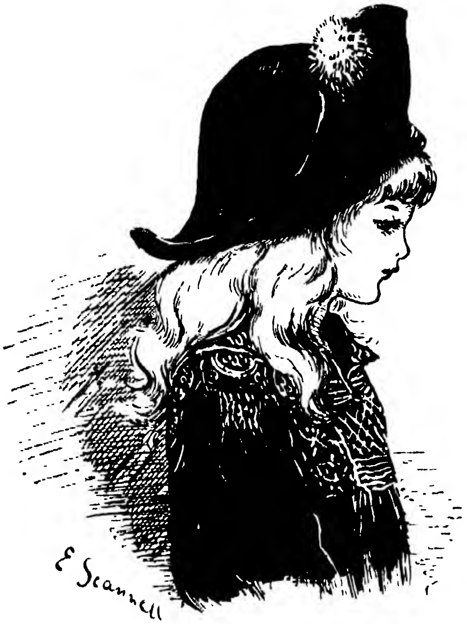


FIG. 53.—ILLUSTRATING PEN-AND-INK (AND BRUSH) DRAWING BY EDITH SCANNELL.

The original from which this was reproduced (without reduction) was made on white enamelled scratchboard. The "solid" blacks were laid with a brush, and when they were dry, the white lines on the hat and dress were put in with a fine brush with Flake White. The same effect in the white on black could have been produced by scratching with the point of a penknife.

More mechanical means still are employed by some of the illustrated newspapers.

Prepared Gelatine Films.—The most common of these are sometimes used to cover down with a gray tint parts of a drawing. Transparent and slightly embossed, the gelatine film, being stretched in a frame (like a child's drawing slate), and placed over the drawing paper, is brought in contact with the latter or any selected part of it, and will transfer to it its lines and dots wherever pressure is applied. It is used most satisfactorily for flat shadows. The advantage these films have over the spatter process is that smaller and more intricate forms may be indicated by means of them. In even a small drawing, for instance, a man's dress coat may be covered and the white shirt-front reserved. White clouds may be reserved in

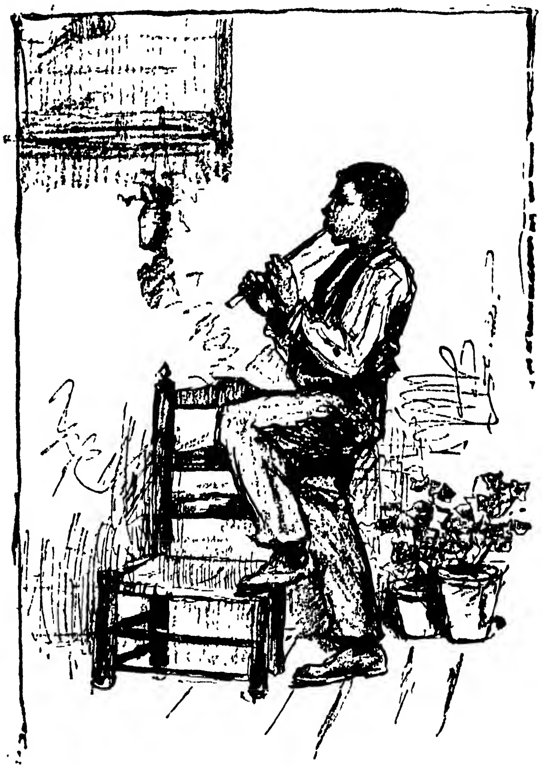


FIG. 54.—CRAYON DRAWING RETOUCHED IN PEN AND INK.

The original was as large as this page.

putting in a sky, or touches of foam upon a windy sea.

Cross-hatched Papers, of different tints and designs, are cut out to the shapes required, and pasted upon the drawing to be reproduced.

Enamelled "Scratch Papers" are perhaps the most easily available of the various mechanical aids to the draughtsman. They are of three kinds—plain, stippled, and lined—and, as in the case of the films just noticed, they are grained or cross-hatched to represent various tints. The lithographic crayon and the pen, either separately or in conjunction, may be freely used in all cases. The great advantage possessed by the enamelled, over the ordinary grained paper or cross-hatched papers, is that, after the drawing is done, if any part is too dark, it can be lightened by scraping the surface with a sharp penknife, and lights can be scratched out clean with the same implement. The stippled and lined sorts of enamelled papers, moreover, present the advantage of a ready-made tint, which may be removed by the knife wherever it is not wanted.

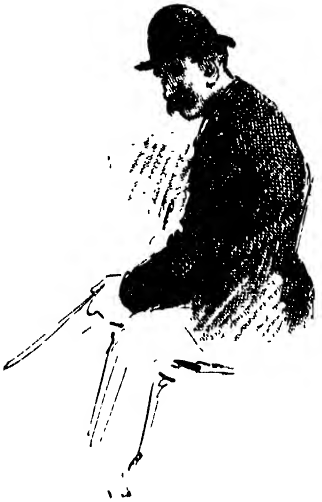


Fig. 55.—Mechanical Shading of Pen Drawing by the Aid of the Gelatine Film.

It will be seen, that there is thus at the draughtsman's disposal a considerable range of effects—those of crayon, pen-and-ink, engraved tints, and scratched-out lights.

It is important to bear in mind, in using the mechanically "tinted" papers, that, as a rule, the tints reproduce darker than they appear to the draughtsman.

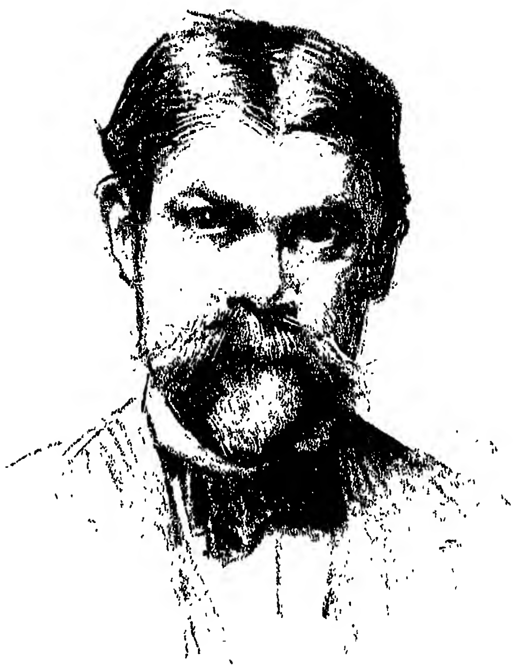


Fig. 56.—Drawing on Egg-shell Paper with Lithographic Crayon.

The original (about the same size) was retouched with ink, and the lights were scratched out with a penknife.

VI. WASH DRAWINGS.

In regard to preparing designs in "wash" or "body colour" (in monochrome) for publication by the half-tone process, we cannot do better than quote the advice of the art editor of a well-known magazine:—

"Remember that the foundation of every class of work of this kind is the photograph, whether in wood engraving, half-tone, or photogravure; and always bear in mind that, while some colours photograph well, others are totally unsuitable for photography.

"A brown—and a warm brown, too—is highly satisfactory for photography, while a cold, bluish tint is not good, and work done thus is apt to come out several tones lighter than the original.

"The wash drawing in water colour yields excellent results. The surface is perfectly dead, and all the lights and whites are represented by the white paper. Oil is not a good medium, owing to the gloss on the surface of the painting; besides, even when done in Ivory Black or Lamp Black, the painting is almost bound to have more or less of a bluish tint. The gloss spoken of is even perceptible in the studios, where all reflected lights are supposed to be excluded; still, it is impossible, in the present state of things, to avoid some reflection.

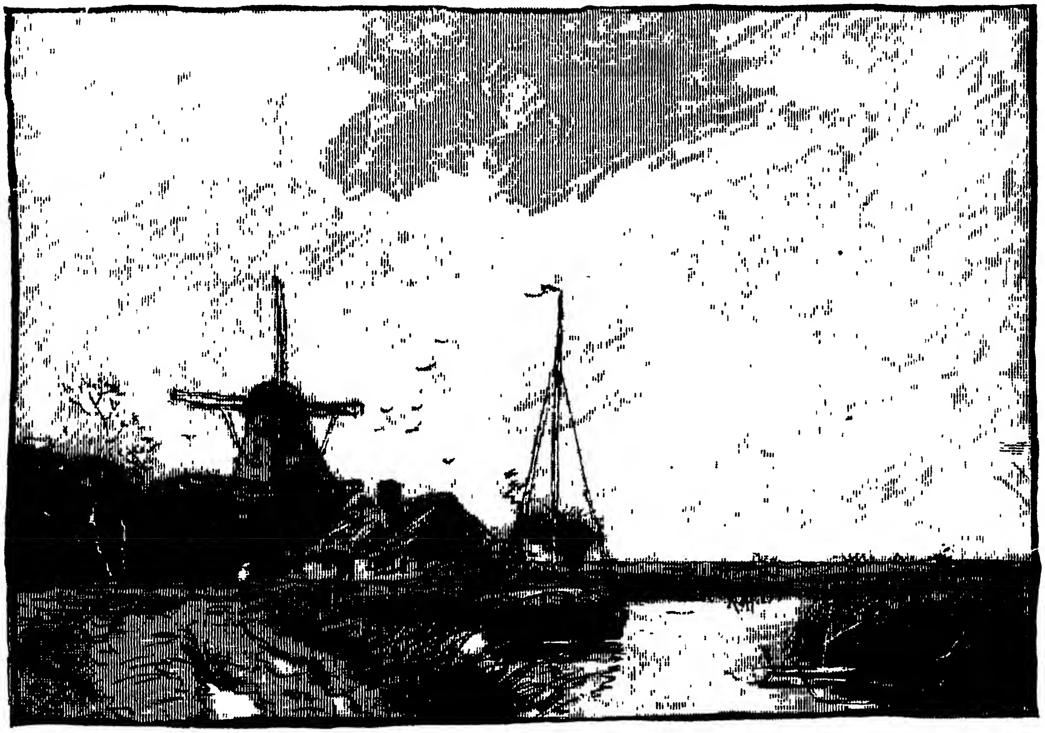


Fig. 57.—Pen Drawing (much Reduced) on Enamelled "Tint" Paper

The surface "tint" has been darkened in parts by aid of the lithographic crayon, and lightened by scraping with a sharp knife for the middle tones. The white clouds and high lights and the man's body have been put in with Flake White. The white lines in the foreground and on the roof have been scratched with the point of the knife.

"Gouache is worked in much the same way as oil colour. Of course, this means ordinary water colours mixed with Chinese White, body colour being used for the lights. The great disadvantage in using body colour is that on being rubbed the Chinese White falls off; sometimes without being touched it will peel and spoil. For instance, a very effective moonlight scene was sent from our office to the workshops, and before it could be photographed the moon had dropped off. But if it is necessary to paint in gouache, use as thin layers of white as possible, and if white has to be used to correct an error, scrape off the surplus paint before applying the pure body colour.

"Remember that when mixing white with the black, the latter is apt to turn blue, whether

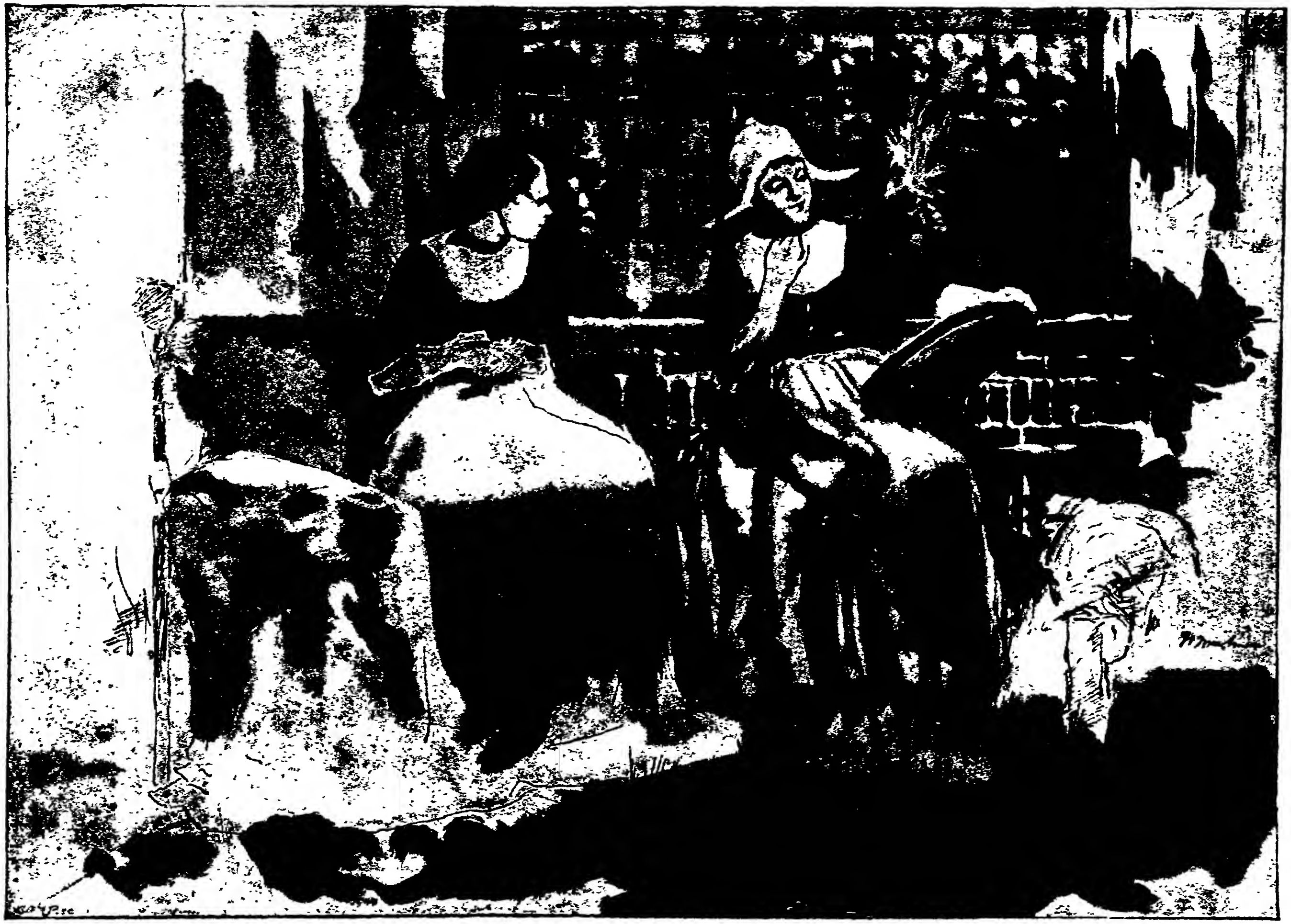


FIG. 58.—PEN SKETCH (BY WALTER MACEWAN) WASHED IN WITH SEPIA. UNFINISHED.

Reproduced (about the same size as the original) by the "half-tone" (Meisenbach) process. By using either Payne's Brown or Higgins' Waterproof India Ink to draw with, one may freely use wash over an ink outline. Under ordinary circumstances, however, a combination of line and wash is to be avoided.

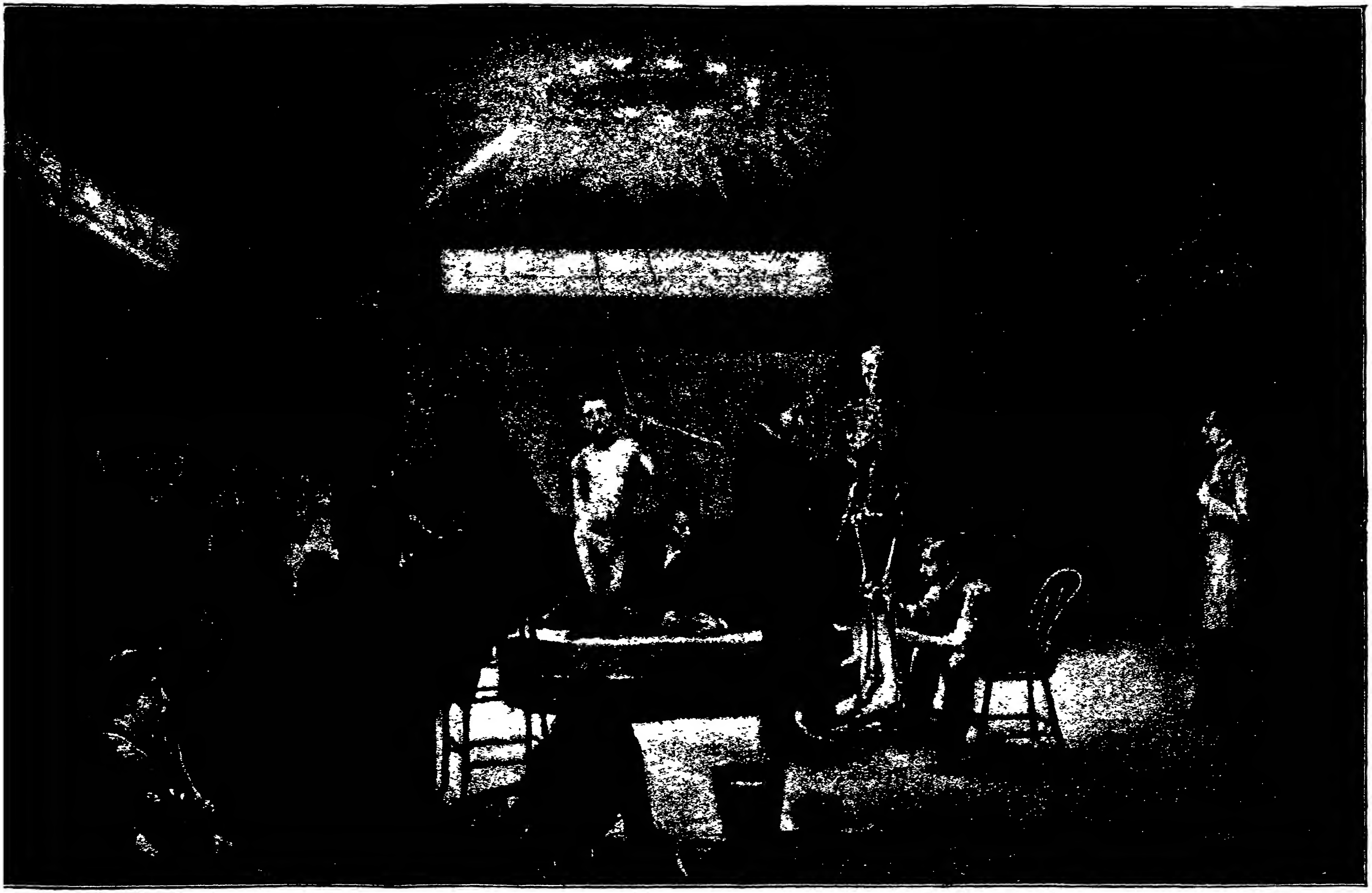


FIG. 59.—MONOCHROME WATER-COLOUR REPRESENTED BY THE MEISENBACH (HALF-TONE) PROCESS.

The Illustration represents a Demonstration of Anatomy in an American (Philadelphia) Art School.

you are working in gouache or in oil colour. To rectify this, add plenty of brown. Even let your drawing be brown—and a warm brown, too. Bistre answers admirably.

"Perhaps the very best medium of any is the charcoal wash. It is perfectly black in the darks, and in the light washes inclines to brown; the lights here are the plain white paper, no body colour being used."

VII. APPROACHING THE PUBLISHER.

An important thing to consider is the choice of the periodical to which a picture is to be submitted. It adds immensely to the difficulty of disposing of a drawing, if it is simply *good* without being adapted in subject and treatment to the lines that have been laid down by the publication to which it is to be offered. One editor likes the pictured record of events of present interest, or that touch on the everyday events of life—glimpses of the dramatic side, such as appeal to every one. Another prefers some tender little domestic episode. Another, again, sets "chic" and style above all other requirements; and still another lays great stress on poetry and "atmosphere."

The choice of the particular medium of artistic expression is also of great importance. Charcoal may at once be crossed from the list. Drawings in lead-pencil are also regarded unfavourably by most editors. Very beautiful effects can sometimes be produced with this medium, but their reproduction is costly and uncertain in result. A drawing in lead-pencil presented for consideration has already had one point scored against its chances of acceptance. Work done in black and white in oil usually stands the best chance, if it is to be reproduced by the half-tone process. It is true that the introduction of a little colour often adds wonderfully to the effectiveness of such a picture; but it is unwise to use colours in this way unless one knows enough about photography to judge accurately how they will reproduce. Magazine editors themselves cannot always tell, and they will not take risks in such matters, unless, indeed, the contributor happens to be some noted artist, who is not exactly amenable to ordinary rules of editorial procedure. Other things being equal, drawings in pen-and-ink are likely to receive the most favourable consideration, because they may be reproduced, not only with absolute accuracy, but at the smallest cost to the publishers.

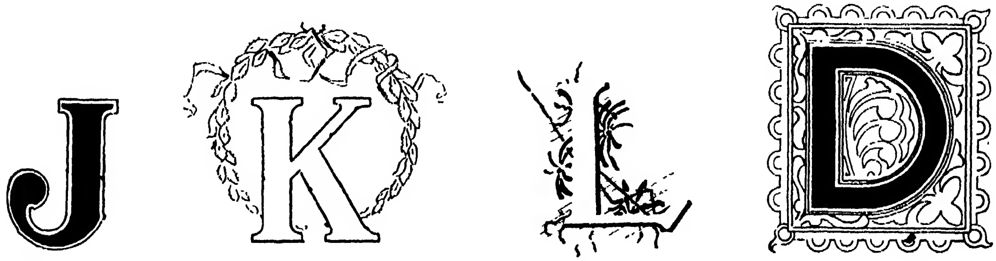
As to getting employment, an illustrator who writes, or who has friends who write, can often introduce his illustrations in that way. Apart from this, perhaps as good a way as any other is to compose a few head-bands and tail-pieces, or make a full-page drawing with a good "motif," and submit it to an editor. But we would repeat that it is very important to know the scope of a publication and its general style before proposing to become a contributor to it. Editors are always ready to look at drawings, and are usually keen in detecting the promise that may underlie even such as are unavailable; but they are, naturally, apt to be prejudiced against persons who take up their time by submitting work of a class of subjects that suggests at once that the visitor has not even taken the trouble to make the acquaintance of the publication to which he asks to be allowed to contribute

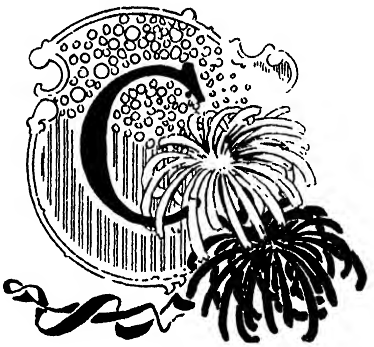
VIII. PEN LETTERING.

There are probably no objects so constantly before the eye as the letters of the Roman alphabet; yet how few persons there are who notice their elegant proportions or their balance of light and shade! Reader, do you know, for instance, which members of the Roman M are shaded and which are hair lines, or whether the horizontal bar in the A is at half the height of the letter?

The Roman letter is the alphabet of history. It preserves the secrets of science and the traditions of art. It was carved on the Roman temples twenty centuries ago; to-day two hundred millions of people read its faces on the printed page. Some designers have a prejudice against it, and all sorts of vagaries are tolerated on the plea that odd and original letters are more artistic.

It is true that its monotonous accuracy is somewhat too suggestive of the type foundry; but we may remove this objection and give character and individuality to the letters. This may be done in several ways, as by running an outline as indicated in the J shown below, taking care that it is not too regular. This suggests the use of the outline alone, omitting the actual letter, as in our next example.





Figs. 60, 61, 62, 63, 64.—Decorative Pen Lettering.

Sometimes the skeleton letter is shaded by making the lower and right-hand line heavier. Now, if only these shade lines are used, we have, as in our letter L, a result like Faith, in that it is "the substance of things not seen."

In the Roman letter the heavy strokes are known as "shade lines," the light ones as "grace lines," and the short horizontal lines projecting beyond the body of the letter as "kerns." Omitting the kerns and making all of the lines of uniform width, the letter becomes "Gothic," as in our fourth example.

The tools needed by the designer are an assortment of writing pens, a ruling pen, India ink, and cardboard or thick, laid white paper of good quality. A set of drawing instruments would be of service, but good work may be done without them. With any book or magazine as your guide, lay out your initials; do not let them wander far from established proportions. Make your drawing twice as large as the desired reproduction, and so avoid the need of trying to make fine lines. Cover any large surface with a brush; the pen is too slow. You cannot hope to imitate the mechanical accuracy of the types, and remember that it is not desirable that you should be able to do so.

Consider your subject, seize upon some salient feature which appeals to your artistic sense, and build your ornament out of this. "Ornament your construction, do not construct your ornament." When floral designs are introduced they should be conventionalised or receive a decorative treatment by being placed against an ornamental background, as shown in the chrysanthemum illustration on this page. Unless the subject of the article has some direct reference to flowers, it is, as a rule, better to avoid a strictly naturalistic treatment.

Strictly speaking, an initial letter is not an illustration, although not infrequently nowadays both appear in combination; it is not merely a typographical ornament, it is a part of the printed page, and must not be so burdened with ornament as to be illegible, nor be so different in treatment and character as to be out of keeping with its context.

Remember that white letters show larger

on a black ground than black on white, the reason being that the light radiates from the white surface on to the black; hence any portion of the lettering may be intensified by the simple method of backing the letters with black.

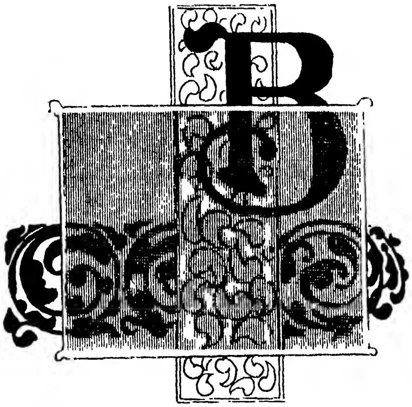


FIG. 65.—DECORATIVE PEN LETTERING.

Avoid over-much ornamentation. Letters were made to be read, so let legibility be the first consideration. Avoid letters so "shaded" as to indicate a considerable thickness of material, as though they were sawed out of wood or built of brick or mortar. A letter has no thickness; neither does it, nor can it, cast a shadow.

The Old English letter was invented by the monks during the Middle Ages, who engrossed whole books in this style. To-day such "monkery" can hardly find a reader, but this artistic and beautiful letter still survives. In a modified form it is the only letter permissible in ecclesiastical work. It can best be made by the so-called "shading pen" shown in our illustration. These letters should be compactly made; too much spacing detracts from their elegant appearance. Do not make the common mistake of using an Old English initial letter and Roman for the rest of the word. Put all your Old English letters into one line, and let that line be by itself.

Copy until you absorb enough of the spirit of decoration to produce original work.

IX. NAME-DEVICES AND MONOGRAMS.

To any of the thousand and one artistic trifles of home manufacture, the addition of the monogram of the ultimate owner of the article adds a personal touch, which gives a pleasure as natural as it is common. For, whether it be the crest and coat of arms of the nobly born or the totem of the savage, the delight in bearing one's rank or even one's name in decorative device is almost universal. The monograms we show, by Mr. Gleeson White, are a departure from the beaten track; they would be ornamental additions to one's note-paper, though suitable, also, for painting on china or other material, and in a few instances for embroidery as well.

The aim has not been to make the initials themselves a complete decoration, but to set them clearly and in a less involved form than in the orthodox monogram within a device that has its own decorative motive. It is precisely the absolute unity of the two motives—the motive of the initials or name and the purely ornamental motive—that it is intended to emphasise. Decorated panels, with a blank space, on which the letters may be placed, are common enough in most styles of ornament, but letters absolutely individual to the design, and not exchangeable for any others, save within certain limits, are less common.

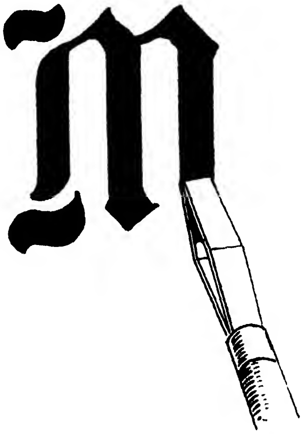
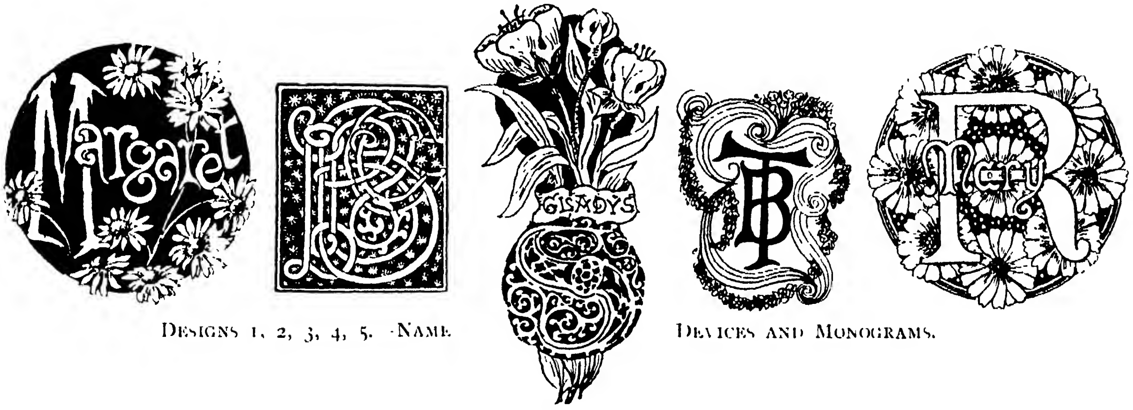


FIG. 66.—DECORATIVE PEN LETTERING.

The very individuality of each design given makes it less useful as a mere copy. Not only must A, B, C remain A, B, C, for it cannot be read as B, A, C; C, A, B; C, B, A, and so on, without radical alteration of its structure; but where the whole name is used, that device is practically limited to the use of one person—unless he be a John Smith, Tom Jones, or other unlucky person who has an individual appellation common to hundreds.

Notwithstanding this, with a few exceptions letters may be interchanged easily enough. B, P, and R are easily made interchangeable, C and G, E and F, O and Q, even U, I, T and L; but S, A, M, N, Z, and others can hardly be made so without a total resetting of the main motive.



Designs 1, 2, 3, 4, 5.—Name Devices and Monograms.

Apart from their intended purpose, these designs may suggest decorative schemes to some who do not care to use them printed upon their note-paper. Drawn in black ink—*i.e.*, India ink or other artist's fluid that is photographically black; which is not the case with ordinary writing fluid—on a much larger scale than shown, they can be quickly and cheaply made into "zinco" blocks for printing from, by any of the firms which produce photographic "process" work.

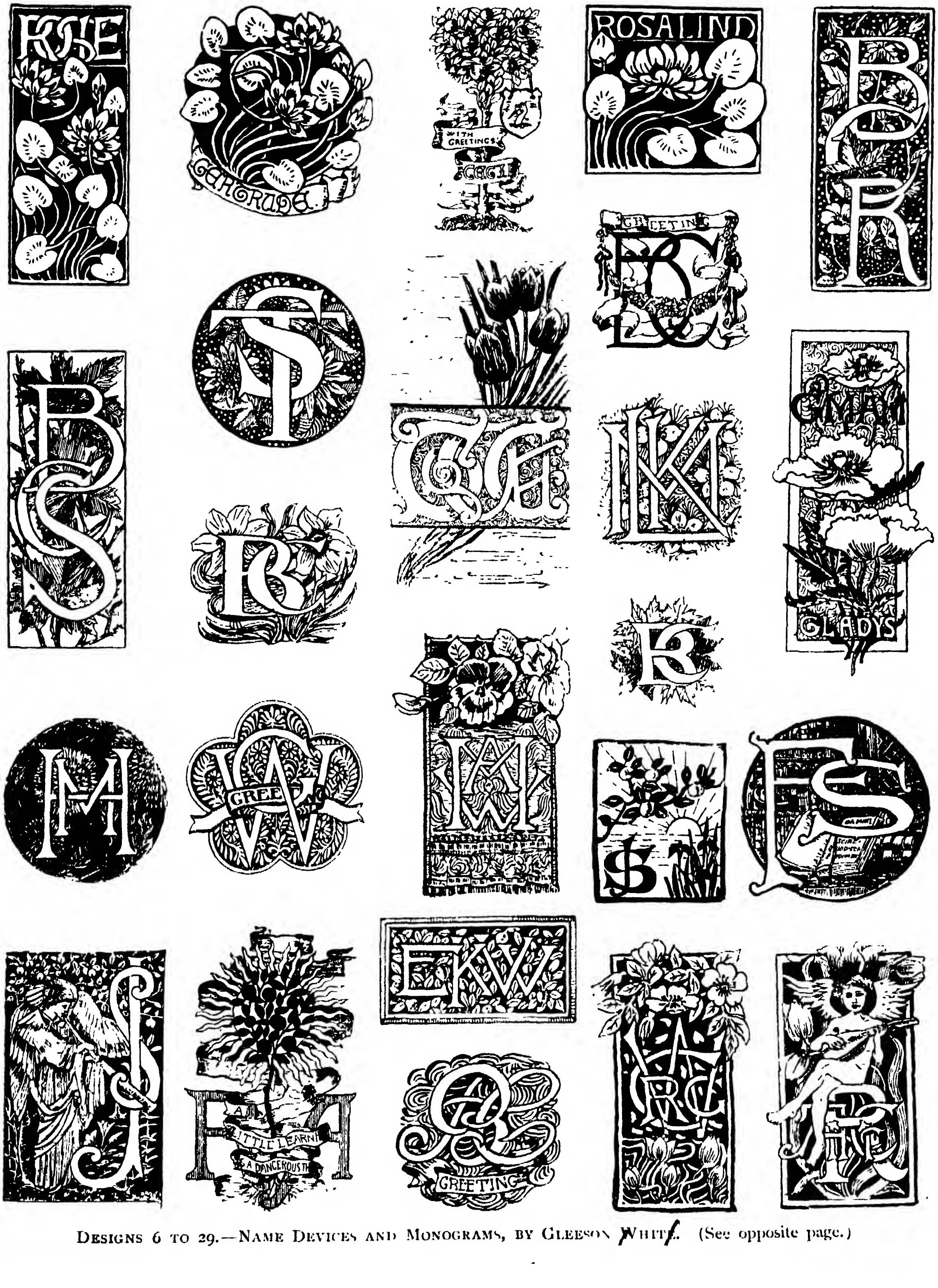
The chief care of the designer of such name-devices and monograms must be to avoid fussy detail. Be satisfied with simple, even trite, forms, and do not attempt anything like pictures: a device is best with conventional treatment of all its details.

X. DRAWING FOR ADVERTISERS

With the higher class of advertisements the line between that kind of work and regular illustrating is very lightly marked. Often the student, after working out an illustration to the best of his ability, and failing to dispose of it for that purpose, may sell it for a good price as an advertisement.

There is a well-known picture illustrating the excellences of a certain baby food—a picture of a child reaching up to whisper something in its mother's ear—which first was sent to several magazines as an artistic drawing, and in each case promptly rejected. Finally it was bought by an advertising firm. For years the same artist had toiled on at that sort of work, and at last she hit the high mark required by the magazines.

It is not always that the object advertised should be introduced into the picture. It is enough if the drawing is good and suggestive. The most important thing is that the picture should be pleasing and sufficiently well executed to catch the public eye. Pleasing does not mean merely pretty: a well-executed study of a street Arab is often as pleasing in its way, even for an advertisement, as a really beautiful picture. But *character* cannot be too much insisted on. If the drawing is of a society girl, let her be stylish and crisp and well groomed. If it is of a tramp, let him be dirty; make it felt that those shoes he wears have come to


ROSE
GERTRUDE
WITH GREETINGS
ROSALIND
GREETING
GLADYS
GREE
EKW
A LITTLE LEARNI
A DANGEROUS TH
GREETING

Designs 6 to 29.—Name Devices and Monograms, by Gleeson White. (See opposite page.)

him already worn out, and since then have tramped miles through dust and mire—in short, let your tramp be consistently dirty and bedraggled.

The most saleable advertisement drawings are those done in pen-and-ink, because they can be reproduced very cheaply. Drawings done in the style of posters, with flat, broad, decorative work, are liked by many dealers. Designs painted in oil colours are objected to on account of difficulties of reproduction. "Wash" drawings, or work executed in opaque water colours, rank next to pen-and-ink in saleability. They can be reproduced more easily than oil colours.

Sometimes a dealer may wish to use a black-and-white drawing in colours; in which case it is not necessary for the artist to repaint the whole picture, but merely to make a small sketch of it in colours as a key for the lithographer.

Of the various ways in which advertisement work may be disposed of, perhaps the simplest is to apply at an advertising agency. Take some completed drawings, to prove that you can finish as well as design; for, if you are unknown, no agent will run the risk of giving you a commission on the strength of a mere sketch you may show him. Sometimes it pays to select some well-known advertiser of enterprise, and offer your work directly to him, if you have something that you think is specially suitable to his business. It is the *idea* that is the saleable thing, and it sometimes happens that this is bought by the advertiser, who then has it carried out by an artist of his own selection.

There is not such necessity for absolute originality in advertising work as there is in illustrating for publishers; but he who depends on others for ideas for his designs will find in the end that it is a dangerous practice, for not only will he run the risk of losing altogether the faculty of originating, but it is not improbable that he may have to stand suit for infringement of copyright.

The constantly increasing employment of photography by lithographers has interfered seriously with advertising work, so far as the designer is concerned. But for most advertising purposes pictures are required which cannot be supplied from photographs; and even in cases where they can be, the services of an artist are generally required to put in backgrounds and accessories. This is not very dignified work, it is true; but such "pot-boiling" sometimes leads to better things. In this sort of business, as in all others, there are always good positions open to those who can prove themselves capable of doing well the particular kind of work that is required.

EX LIBRIS MARIE S. PETERSEN.

PAINTING.

GENERAL PRINCIPLES.

ALL painting is done in water colours or in oil colours. With either medium, one may cover the surface of a wall or paint a fan. Strange as it may sound, water colour is the older medium. As applied to paper it is, it is true, a modern art; but fresco painting, which preceded it by centuries, is only water colour on fresh plaster, as the modern waterglass is water colour on dry plaster. Fresco remained the favourite medium of some of the greatest artists of Europe long after the introduction of oil painting. Michael Angelo held the latter in contempt, and would never use it; but it cannot be said that the objections to it were any more a matter of prejudice than those which, up to the last quarter of the present century, prevailed on the Continent against the use of water colours for easel painting.

"Colours" and "Pigments." These terms, strictly speaking, are not interchangeable, as they are often supposed to be. Pigments are colours, but colours are not necessarily pigments. Colours, primarily, are associated with the phenomena of the solar spectrum, and may be considered either in the abstract or concrete. Pigments are substances which contain colouring matter in so great a degree that they are used to impart colour to other substances. Popularly they are called "paints." Mixed with an appropriate vehicle [1] they become water colours, oil colours, mineral colours, etc.

The Primary Colours. The principle of colour in painting is founded on the solar spectrum, as shown by the analysis of a ray of light seen through a triangular prism [2] of clear glass. The sunbeam thus imprisoned shows six distinct rays, respectively coloured violet, blue, green, yellow, orange, red. Of these, according to the old theory, yellow, red, and blue are primary colours: that is to say, none of them could be produced by the combination of any two or more of the six rays. Modern scientists affirm that, in an objective sense, there are no primary colours; that we are only cognisant of colour through the sensations produced upon our eyes, and that in this stage, red, green, and blue are the three primary colours.

However this may be, it is certain that for the practical purposes of the artist, red, green, and blue would not do, for with them we could not produce yellow, and without yellow, orange and various other hues would be missing. So we fall back on red, yellow, blue. The red, yellow, and blue of the solar spectrum are supposed to be most nearly represented by Rose Madder, Aureolin, and Cobalt; but Prussian Blue, Crimson Lake, and Gamboge will be found more useful. With these pigments you can produce nearly every shade and tint, and even Black.

Secondary Colours. Let us put on a separate part of a plate or palette a little of each of the three pigments we have chosen to represent the Primaries. Combine any two of them, and you produce one of the Secondaries. Thus, mix the Blue (Prussian Blue) and Red (Crimson Lake), and the result is Purple. Mix the Blue and Yellow (Gamboge), and you get Green. Red and Yellow, and you get Orange. If you combine all the Secondaries in the right proportions you will produce Black.

Tertiary Colours are produced by mixing together the Secondaries in proper proportions They are Olive, Brown, Citrine, Russet, and Gray.

If a combination of any two of the Primaries is too positive, we modify it by a touch of the third Primary. Our Prussian Blue and Crimson Lake may give a brighter *Purple* than we need. A touch of Gamboge or some other yellow will correct this. Our *Orange* made of Gamboge and Crimson Lake will be very brilliant—it is the warmest possible combination of colour. A touch of Prussian or some other Blue will modify and cool it. Our *Green*, composed as it is of Prussian Blue and Gamboge, is too green for almost any practical purpose. We can easily reduce the intensity by a touch of our third Primary, Red.

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[1] *Vehicle* or *medium* is the fluid that the painter mixes with his pigments in order to bring them into proper working order.

[2] A *Prism* is a solid whose bases are similar, equal, parallel, plane figures, and whose sides are parallelograms. A glass triangular prism is used for demonstrating the principles of the *solar spectrum*.

Having mentioned "warm" and "cool" colours, let us explain what is meant by those terms.

"Warm" and "Cool" Colours become such according to the presence of blue in the case of the former, and of yellow or red in the case of the latter. Blue is the representative cold colour. Yellow and red are the representative warm ones. Hence, as red approaches yellow it becomes warmer. Orange (which is composed of red and yellow) is the warmest colour in nature. As red takes on blue and gets a violet or purplish tinge, it becomes cooler. As yellow approaches blue it becomes slightly cool, and by the addition of more and more blue it becomes first a strong green and then a blue-green, which latter is decidedly cold. Emerald green is intensely cold.

Local Colour is the actual colour of a thing as seen in ordinary daytime, unaffected by conditions of atmosphere, distance, shade, or excessive light.

The local tone of flesh is warm, for it contains both red and yellow, with no particle of blue. The warm shadow of the flesh is made of dark red and a dark yellow. The half-tone shadows are cool, being of a decidedly bluish, sometimes rather greenish, again a more purplish, gray, but always containing blue. The half-tones are usually cool, but in the dark shadows and in the direct light there is always some warmth.

Power means the capability of a colour to produce depth of tone. For instance, Prussian Blue has great power, because it can be graded from the palest wash to the darkest blue. Antwerp Blue has less than Prussian Blue, but more than Cobalt Blue; for the latter, no matter how strongly you use it, will always remain the same light blue.

Balance refers to composition. It is not necessarily regulated by corresponding masses. A mass in subdued light or half shadow may easily be balanced by a much smaller object that is brilliant in colour or particularly deep in tone or shadow.

Contrasts and Harmonies. The following are the principal ones:—

Red contrasts with Green, and harmonises with Crimson.

Green	Red	Yellow.
Orange	Blue	Red or Pink.
Purple	Yellow	Crimson.
Yellow	Purple	Orange and pale colours.
Gold	Dark colours	Light colours.
Black	Pale	Deep colours.
White	Black, Brown	Any colour.

Tone describes the hue of a colour, or of a picture, or part of a picture. We say that the tone of Indigo is dull blue; that of Gamboge, bright, slightly greenish yellow; and Madder Lake, rose red. We also speak of the golden tone of a Cuyp or Rembrandt, the purple tone of a distance, the grayish tone of a river scene. We speak, too, of a "warm tone" and a "cold

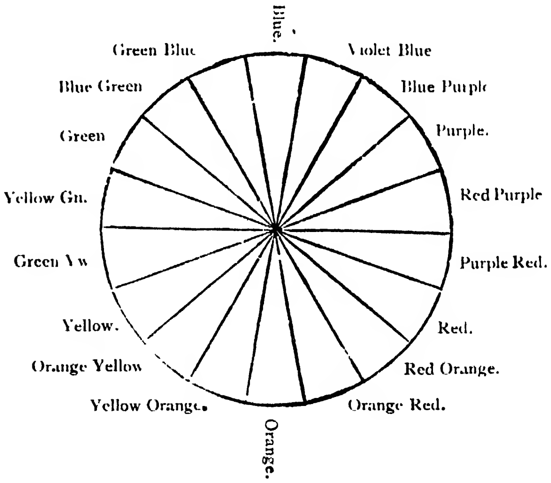

FIG. 67.—SHOWING HARMONIES OF COLOURS.

tone," with reference to the presence, respectively, of much red or yellow, or much blue or black. Owing probably to the fact that the prevailing colour of a scene is usually due to the light that illumines it, and that again most often to the state of the atmosphere, some writers say that a picture has tone when they mean that the atmospheric effect is well rendered.

Shade means the partial absence of light, or the modification of a colour by mixing black with it. Ladies often use the word to mean any modification of a colour, whether by an admixture of black, or of white, or of another colour. **Hue** is the proper term to use in the last-named case.

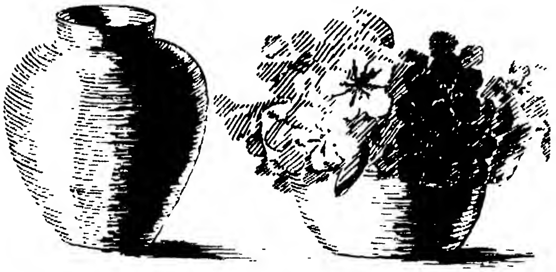

FIG. 68.—ARRANGEMENT OF VALUES, SHOWING THE HIGH LIGHT, THE DEEPEST SHADE, THE HALF-TONES SURROUNDING THEM, AND THE REFLECTED LIGHT.

Tint, strictly speaking, means a colour mixed with white, or modified by light. It is often used erroneously as a substitute for the word colour.

Values. Under DRAWING we have referred to values as the relation of dark and light between one colour and another. We may say further that values are the preparations of depth or intensity in colour, a deep green, for instance, being darker than a light green ; and they may be studied with a single colour, as black or brown, a deeper shade of the latter being put for the deep green, a lighter for the light green. The above illustration shows how they should be studied and differentiated in the drawing or painting of any object or group of objects. There are here, it will be noted, fine grades of light and shade—the high light, the deepest shade, and the half-tones surrounding them ; the half-tone beyond the deepest shade being the reflected light.

In colour, along with those differences of intensity (values), one finds differences of hue (tones), and must distinguish not only the degrees of darkness of the objects in the picture, but also their degrees of greenness, or brownness, or blueness, in all the variety of grays and broken tones to be found in nature. In drawing with a single colour (ink, or charcoal, or sepia), one abstracts the values and disregards the tones ; just as in drawing for form only, one may abstract the outline and the shade, and disregard the values—the intensities of colour. But when using a palette set with several colours, one must attend to outline, shading, values, and *tones* all at once.

PAINTING IN WATER COLOURS.

PRINCIPLES AND METHODS.

IN the order of their importance in public estimation, oil painting takes precedence of water-colour painting. Amateurs usually begin with the latter, believing it to be easier to learn. In this respect we shall follow them, but it is by no means certain that their belief is correct. In oil painting the method is certainly the more practical and logical. From shadow you build up your light in a manner deliberate, matter-of-fact, and obvious. But in water colour you have your highest light given you in the light of the paper, and you must manipulate the transparent washes with so much deftness and skill as to portray all the shadow and colour of the subject and leave the lights clear and pure. This is not easy. Without discouraging the reader, we do not wish him to enter too lightly on the study of this beautiful art. He may be sure that it requires quite as much study and practice to arrive at excellence in water-colour as in oil-colour painting.

Water colour is very different from what used to pass by that name. In the days of the old masters it was used simply as a flat auxiliary wash for their drawings, and even now many cultivated persons call all water colours drawings. It is not long, indeed, since pictures in water colours ceased to be mere coloured drawings. We can all remember the time when minute stippling[1] and smooth execution were most admired, although to paint in water colours at all was considered but a pretty and feeble accomplishment, spoken of with indulgent disdain or as a ladylike and harmless evidence of gentility, according to the point of view. The modern practice of water colour is as distinct from mere drawing as is oil painting. It presents an art complete in itself, a rival of oil painting.

The distinguishing qualities of the medium are brilliancy, purity, and transparency; but painting in water colour need by no means be lacking in strength. Indeed, in examples of moderate dimensions, that quality is often quite marked.

The essential technical difference between oil painting and water-colour painting is that in the one the pigments used are prepared with oil, and applied with that or a similar unctuous vehicle, giving great body to the colours and rendering them *opaque*; in the other the pigments are prepared with water, and water only is used as a vehicle, the main purpose being to maintain a luminous and *transparent* effect with the aid of the white paper.

There are two general methods of painting in water colours:

(1) **The Transparent Method** is founded on the principle that purity and transparency[2] are characteristic essentials of the art, and that the light in the sketch or picture should come from the white paper. Transparent colours are employed whenever possible, the manner of working being to *float* the colours upon the paper in a series of washes more or less dense in quality, according to the quantity of water used.

(2) **The Opaque Method** ignores the white paper and light theory, and encourages the use of opaque, or "body," colour, as it is sometimes called.[3] The high lights are put in with white paint, as in oil painting, which the process somewhat resembles. Any transparent colour may be made opaque by mixing with it some opaque colour. Chinese White is generally mixed for this purpose, with all the transparent colours.

The opaque method is much used for decorative painting on a small scale, such as fan painting and painting, generally, on delicate textile fabrics.

Opaque water colours applied in washes are specially adapted for sketches or pictures intended for photographic reproduction in magazine or book illustration (see p. 50).

The transparent method is considered the more legitimate, and is that almost invariably followed by the best British water-colour painters. For this reason we shall keep it in view in our general instructions in the following pages, in regard to painting Flowers, Fruit, Still-Life, Landscape, Marines, and Figures.

Painting in the transparent method does not imply by any means that we are to reject the opaque or semi-opaque colours that are found in every ordinary box of water-colours, or any of them that we may find it convenient to use. It is only necessary to bear in mind that the white paper must remain the source of light in our picture; that we are to avoid the use of white paint even for high lights when it can be avoided, and that we are never to mix white with our colours for the purpose of giving "body" to them.

As between the methods of working on dry or on wet paper, our preference is for paper moderately wet. Beginners may do well, perhaps, to paint at first on dry paper, for it allows of more deliberation in working than is otherwise possible. As facility increases with knowledge and practice, they will naturally broaden their manner of handling, and this will call for the use of wet—sometimes very wet—paper.

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[1] *Stippling* is shading or filling a given space by means of dots (see p. 61).

[2] *Transparent Colours.*—Transparency means the capability of a colour not to hide another colour when washed over it. Gamboge, all the Lakes, all the Madders, and all the Carmines are transparent.

[3] *Opaque* (called by the French "*gouache*") *Colours* are Chinese White, Yellow Ochre, Naples Yellow, the Cadmiums, Vermilion, Light Red, Indian Red, Emerald Green, Cobalt, Ultramarine, Ultramarine Ash. Lampblack is semi-opaque.

The Very Wet Method will be explained by a practical example in one of the lessons in FLOWER PAINTING (see p. 83).

The Modern Dutch Method.—A lesson in the very wet method in combination with the Transparent and the Opaque ways of manipulating the colours, in accordance with the practice of the Modern Dutch school, will be given in a supplementary chapter on LANDSCAPE PAINTING (see p. 118).

"Glazing" and "Scumbling."—It is not only by mixing two or more pigments that the painter gets the colour combinations he desires. He gains special effects by superimposing one colour over another, when the first colour is dry, using either a transparent colour over an opaque colour, or an opaque colour *thinly* over a transparent one.

The washing of a transparent colour over another is called glazing, when the under one is an opaque colour. When the under colour is transparent and an opaque colour is washed over it—but so thinly that it is semi-transparent—the process is called scumbling.

To understand the principle of glazing one has only to lay a wash of Prussian Blue or some other blue on paper, and when it has dried, lay a piece of red glass over it. The colour on the paper now appears neither blue nor red, but as a combination of the two colours—purple. The blue is seen beneath the red, however, and so it is with a "glaze" of transparent colour like Crimson Lake, for instance. The term "glaze" owes its origin, no doubt, to this familiar experiment. It has nothing whatever to do with shininess, as many people, ignorant of the graphic arts, seem to suppose it has.

Stippling (*i.e.* shading by means of dots placed more or less closely together) as a rule should be avoided in water-colour painting, principally because it is apt to give a laboured appearance in place of the suggestion of free execution, which is a special charm of this medium. Another reason is that if your well stippled picture is viewed from the opposite light to that in which it was painted, a cast shadow will appear from each of the little lights from the grain of the paper which probably you were careful to cover with colour so as to produce a uniform evenness. In miniature painting, stippling is not only permissible but even desirable.

Hatching (*i.e.*, shading by means of lines crossing at right angles).—The above remarks as to stippling apply, in general, to hatching and cross-hatching. (See MINIATURE PAINTING, p. 125.)

MATERIALS AND APPLIANCES.

Paper.—For many years Whatman's water-colour papers were the only kind approved of by painters in that medium, and they are still deservedly held in high esteem. But they have now a formidable competitor in the "O. W." papers, which have the prestige of being manufactured under the direction of the Royal Society of Painters in Water Colours.

Choose a paper with a slight grain. You can work as broadly as you please upon it, and if it should seem desirable to add a little detail, that also is possible; but upon very coarse-grained paper only very broad work, which calls for much knowledge, is possible.

Choose rather a heavy paper; else your work may "cockle" or warp when wet, and it will be difficult to lay an even tint. The right side of the paper may be known by the maker's mark, which, when held up against the light, reads properly (not in reverse) on the right side.

The "Solid Sketch Block" is a great convenience in emergencies, saving the necessity of using either drawing board or table. It is composed of many sheets of paper compressed and all ready stretched to work on. When you have finished a study, insert a knife blade under the upper sheet, take it off, and underneath is another sheet all prepared for another sketch. The blocks are made in several sizes. A useful size is 10 × 14 inches.

Lead Pencils.—Choose those of a medium quality, not so hard as to scratch the paper, nor so soft as to "wash up" and sully the colours.

Sponges. — Have a couple of small, fine sponges—one for cleaning the palette, the other for moistening the paper.

The Drawing Board may correspond in dimensions with any of the regular sizes of water-colour paper. The kinds of boards made for water-colour work are either plain or panelled. The plain is generally used by artists. Their usual method is to wet the paper well on both sides with a sponge and clean water, and also to wet the drawing board, leaving, however, a dry margin of about one inch all round the latter. The paper is laid on the board and gently pressed down with the damp sponge. The edges are then pasted to about half an inch, and the paper over them is pressed down with a dry cloth. When the paste is dry, the paper is wetted again except at the edges: when it shrinks in drying it will be quite level.

The panelled board enables you to stretch the paper without pasting. The paper is thoroughly wetted, in the manner already described, and laid on the panel, but extending beyond it an inch or more all around. Panel and paper are thrust into the outer frame, and are kept in place by two sticks at the back, arranged similarly to those at the back of a child's ground-glass drawing slate.

Thumb tacks are short, broad-headed nails, with which the water-colour paper may be secured to the board, in case the paper is neither to be pasted nor held in place by means of the panel as described above. The tacks are inserted in the wood by a slight pressure of the thumb, and are as easily removed by the finger nail.

A T-Square is often convenient to have at hand for squaring the drawing.

A Plain Compass is also useful at times.

Blotting Paper is almost a necessity; sometimes it is used to soak up superfluous water, and sometimes to modify a wash of colour, or to take out a high light accidentally covered up. It is well to have a piece under the hand while painting, so as to avoid soiling the paper.

Brushes are of two kinds—the round for ordinary use, and the flat for laying level washes, softening, etc. Those mounted in quills are generally preferable. They are to be had in all sizes. A good rule is never to use a small brush when a large one will answer the purpose in hand. This helps you to avoid a petty, niggling style, which is fatal to good execution. Camel-hair brushes are most generally used; sables, as a rule, are much dearer, but they are much stronger, and every water-colourist adds two or more to his stock. The red sables are somewhat too strong for water-colour, and for this reason the brown, which are not so strong, are usually preferred. Have a good stock of brushes, and have no cheap ones among them. A cheap brush almost invariably is a bad brush.

The Water used for cleaning brushes is soon fouled; it is therefore well to use a good-sized vessel to hold it. A separate tumbler of clean water should be kept exclusively for wetting the brush before filling it with colour. Always wash the brushes quite clean, and, in putting them by for future use, leave them dry and in a proper shape.

Gum Water, used very thinly, increases the depth and transparency of shadows. It should be made from the best gum arabic, with a little white sugar candy added.

Erasers.—It is better to use bread than india-rubber to rub out pencil marks. The rubber is apt to leave a gloss, over which the colour will not flow evenly. A difficulty of this sort can be corrected by mixing a little ox-gall with the colours.

Ox-gall is sold in little pots. A mere touch of it at the end of the brush, as a rule, will be sufficient to make the colour flow freely over a greasy surface.

Sand-paper.—Very fine sand-paper is sometimes used to suggest granulation and atmosphere, by slightly rubbing the surface of the paper to make the colour flow freely over some obdurately smooth spot.

COLOURS AND COMBINATIONS.

Water colours can be bought in collapsible tubes, like oil colours, in whole cakes, or half-cakes, in pans or in half-pans. The last-named are called moist colours, and it is only necessary to apply a wet brush for the paint to come off easily. Water colours in cakes are hard, and must be wetted or rubbed upon a palette or plate.

The moist colours are decidedly the most suitable. Arrange your selection of pigments with some system. It will be found convenient to keep the reds and browns together in the centre of your box, and the yellows and blues, respectively, at either end. Take off the tin-foil and the layer of paper from the pan, and write the name on the bottom in ink; otherwise you may forget it before you become familiar with the colour.

For general use, the following colours will be found to answer every purpose:—

Gamboge.
Yellow Ochre.
Indian Yellow.
Vermilion.
Rose Madder.
Carmine
Crimson Lake
Light Red.
Burnt Sienna
Vandyck Brown
White (in tube)
Lamp Black.
Indigo.
Antwerp Blue or
Prussian Blue
Ultramarine.

If we increase this list by the following colours, we shall have a bountiful palette, sufficient even for all the exigencies of flower painting:—

Aureolin.
Cadmium Yellow.
Lemon Yellow.
Scarlet Lake.
Neutral Tint.
Raw Umber.
Burnt Umber.
Raw Sienna.
Brown Madder.
Cobalt Blue.
Ultramarine Ash.
Permanent Blue.
Mauve.
Hooker's Green, No. 1.
Emerald Green.
Vert Emeraude.
Light Zinober Green
Dark Zinober Green.
Sap Green.

If we want a choice of colours for painting in monochrome, we may add:—

India Ink.
Charcoal Gray.
Payne's Gray.
Sepia.
Bistre.

Of the colours in the foregoing lists, Hooker's Green, the Zinober Greens, Neutral Tint, and Payne's Gray are the only ones compounded of two or more pigments.

Aureolin is a valuable yellow, permanent, transparent, very pure in hue, and washes well.

Gamboge is a bright and slightly greenish yellow, not very permanent, and without much power It washes very well, but looks dingy if laid on thickly. Valuable for glazing, especially in landscapes where greens are too intense and heavy. Combined with Indigo or Ultramarine it makes good greens. It gives useful sombre greens with Sepia or Payne's gray.

Yellow Ochre is a warm, sombre yellow, of great permanency, good body, and washes well. It is rather opaque, very useful for high lights on stone. For middle distances, it produces quiet greens, in combination with Indigo or Cobalt.

Indian Yellow is a rich, transparent, fairly permanent colour of considerable power, and washes well. It is valuable for foregrounds, combined with Indigo or Prussian Blue. With the addition of Burnt Sienna, it gives with those colours good autumnal tints.

Cadmium Yellow is a rich golden, luminous colour of tolerable power; it is permanent, and washes very well. It is valuable for first tints, and for sunsets and high lights; but it comes very forward, and must therefore be used with discretion. With Vermilion it makes Orange Red. Nearly the same effect can be gained with Vermilion and Gamboge or Indian Yellow.

Lemon Yellow is a very pale, rather opaque colour, of not much power; it is permanent, and washes well. It is valuable for delicate flowers, and with Black shades them. In landscape it serves various purposes: light washes of sky in sunrise and sunset; brilliant touches of sunlight; with Cobalt, Emerald Green, or Burnt Sienna it is very serviceable in high lights of foliage.

Burnt Sienna is a warm, reddish brown, good in flower painting for standing yellows. It is quite permanent, has considerable power, and washes very well. Excellent for ground and banks. With Lake or Madder it gives good tints for stone work. But it is invaluable for foliage, when mixed with Ultramarine or Indigo and a yellow. Mixed with Indigo or Ultramarine it makes a fine green.

Vandyck Brown is a very rich brown, very permanent, transparent, very powerful, and washes very well. With Antwerp Blue it makes a deep green, with Indigo or Prussian Blue an intense neutral green, and with Cobalt a deep gray. With Crimson Lake it makes a brilliant red-brown.

Raw Umber is a dull, semi-opaque yellow-brown, quite permanent, of fair power, and washes very well. It is useful for first washes on hill or mountain side.

Burnt Umber is a dull reddish brown, richer than Raw Umber, is permanent, of fair power, and washes very well. Combined with Ultramarine it gives a deep green for foregrounds.

Brown Pink is a rich citrine, very transparent, fairly permanent, of fair power, and washes very well. It is very useful for near objects, and capital for washing over greens that are too blue. With the addition of Burnt Sienna, Gamboge, or Crimson Lake, it gives good foreground foliage.

Terre Verte is a gray-green, especially valuable for distances, or the under side of leaves.

Sap Green is a warm, rich grass-green, not permanent; but it has considerable power and washes well.

Vermilion is a brilliant, opaque scarlet of great permanency and great body, but it washes badly. Mixed with Carmine it makes a deeper and more brilliant red. With Cobalt it makes a splendid gray. It is useful for the highest light on brickwork, touches in boats and parts of the gorgeous sails of some of them.

Light Red shaded with Vandyck Brown is used for bricks and tiles. This colour is invaluable for grays in foliage, as well as flowers.

Rose Madder is a delicate, transparent rose-red of great permanency. It washes very well, but has not much power. It is used as a first wash over the paper, to give aerial tones. Combined with Aureolin and Cobalt it gives tender grays, specially useful for distant mountains and hillside foliage. With Cobalt alone it gives a beautiful gray.

Carmine is a warm transparent rose-red of considerable power, but of not much permanency; it washes very well. In combination with Vandyck Brown, it gives a rich, dark red for shading red flowers. The effect is the same as Brown Madder.

Crimson Lake is similar to the above, but even less permanent, especially in thin washes. It is useful for correcting coldness in foreground greens. Combined with Ultramarine or Cobalt it gives a purplish gray. With Cobalt it makes a delicate lilac.

Cobalt Blue is a bright light blue of the colour of the forget-me-not; it is permanent and of some power, but somewhat lacking in depth. It washes very well. For skies and distances it is of great value. Combined with Naples Yellow or Yellow Ochre it is available for distant trees. With either Light Red, Indian Red, or Brown Madder, it makes valuable grays.

Mauve, in thin washes, gives a Lilac, but it is generally too blue, and requires Pink with it. Mauve, with Carmine or Crimson Lake or Brown Madder, gives a Royal Purple. But Mauve must be carefully handled. It is an aniline stain, and no amount of washing will erase it from the paper; therefore, use it thinly.

Ultramarine Blue is one of the purest and most brilliant colours, and has great permanency. It has not much power; it washes very badly, and is therefore less useful than Cobalt. Sometimes it is washed lightly over the latter with good effect.

Ultramarine Ash is a very beautiful atmospheric gray, fairly transparent and quite permanent.

Prussian Blue is too fugitive to be really valuable; but it has great power, and washes very well. It is more brilliant than Indigo, and is very transparent. Mixed with various yellows it gives vivid greens.

Antwerp Blue much resembles Prussian Blue, and washes well. As it has more permanency, we recommend it in place of the latter. As an oil colour it is considered entirely safe. It has less power than Prussian Blue.

Permanent Blue is pure, brilliant, and washes well. It is particularly valuable for its permanency. It has not much more power than Cobalt. It stands midway between the latter and Ultramarine Blue.

Indigo is a very powerful, transparent, dull blue, only fairly stable. It may be made less coarse by the addition of Cobalt. Combined with Indian Yellow or Gamboge it makes a rich green for foregrounds. For autumnal tints this may be modified with Burnt Sienna.

It is often an advantage to have ready-made greens at hand. The Zinobers are valuable, although not indispensable, as the same colours may be produced by combining Antwerp Blue, Cadmium, and Vermilion (or Chrome Yellow and Prussian Blue).

Ultramarine Ash is a gray of exquisite quality for atmosphere.

Hooker's Green, No. 1, is a grass green of middling permanency and considerable power; it washes well.

Emerald Green is the very brilliant pea-green that the French call *Vert Véronèse*. It is fairly permanent, has great body, and washes well. It is so intense that it must be used most sparingly. The French *Vert Emèraude*, it should be understood, is not the same as our Emerald Green. It is what we call *Emerald Oxide of Chromium*. It is a very different colour from the above. Powerful, opaque, and quite permanent, it is very useful in landscapes in parts of the foreground (especially in oil painting).

Lamp Black is permanent, but has not very much power; it washes very well. It is the only black that is at all opaque, and it is only partly so.

Indian Ink is a pale black, very permanent, of very little power, and washes well. The French properly name it *Encre de Chine*, for it comes from that country and not from India at all. Indian Ink does not dry really black, but a deep shade of gray. The European imitation contains brown. When you rub the real Indian ink with water, there is not the slightest grit, and if you mix it with a great deal of water there will be no sediment; you may pass your brush full of water over it when it has dried on the paper and it will not disturb it.

Indian ink and the following six pigments are all more or less suitable for monochrome painting (see p. 66). Used as either transparent washes or as washes rendered opaque by the addition of Chinese White, any of them will reproduce satisfactorily by photography (see p. 48).

Payne's Gray is a cool gray, permanent, of great power, and washes well.

Charcoal Gray is ground charcoal, and gives the effect of charcoal wash. It is cool gray, shading to black. For monochrome painting for photographic reproduction it is excellent.

Neutral Tint is a warm gray, permanent, of great power, and washes very well. Excellent for monochrome.

Bistre is a rich, permanent brown, of good washing qualities.

Sepia is a valuable brown, permanent, of great power, and washes very well. It is too heavy for shadows. Combined with Indigo or Ultramarine it produces a fine neutral green; and with Crimson Lake a very rich, warm brown.

Raw Sienna is a warm, tawny, transparent yellow, very permanent, of much power, and washes well. Very useful for first washes for water, also for glazing over foliage which seems too green.

Brown Madder is a russet-maroon, very transparent, very permanent, and washes well. Combined with Ultramarine and Yellow Ochre it gives a rich colour for tree trunks; with Raw Umber and Cobalt it is a useful shadow colour.

Grays.—By mixing red, blue, and yellow you can produce any tint of gray. In equal proportions they will give a neutral gray; use red and blue in the greater proportions, and your gray will have a violet tint; let blue and yellow predominate, and you have a greenish gray.

Become familiar as soon as possible with the resources of your colour-box. Practise mixing different colours to produce the *same* effects. You will find, for instance, that Sepia mixed with a little Burnt Sienna will take the place of Vandyck Brown. Mix Sepia with Madder Lake, and you get the equivalent of Brown Madder. Terre Verte and Yellow Ochre will give you Olive Green.

WATER-COLOUR PAINTING IN MONOCHROME.

SOME teachers are of opinion that the student should not begin at once with a full palette. The facts of *chiaroscuro* [1] are the same whether you employ one colour or many, and it is held that these can be no better learned than by means of a simple course of monochrome. The attempt to represent colour and shadow, too, with the same colour is not confusing when you realise that if you get the right values—*i.e.* the proper relations of light and shade—the colour will take care of itself.

Undoubtedly there are advantages in this monochrome practice. Without having to face the problems of colour also, you acquire the knowledge of how to lay a tint smooth or broken, how to graduate it, how wet or how dry, and when to let it dry with edges and water-marks if it must. You see how much more transparent it lies if it consist of only one wash of tint of the proper darkness at first; how much more thick, yet misty, the shadows are when made of superimposed tints. You observe how vigorous and brilliant it can be when it is a dark tint, with high lights drawn wetly in, as it is expected to remain, and left as it was first placed. On the other hand, it must be said that, if a subject is worth a high finish, it will require no more work to give it in colour than in simple black and white; and in the former case you will learn more than you would by doing it in monochrome.

Quite apart from the consideration of a monochrome painting for its own sake, is that of its availability for photographic "process" reproduction, for book or magazine illustration. When a picture or design is made with this end in view, mix Chinese White with your transparent colours, to render them opaque. This will make it easy to get all the "colour" gradations from black to pearly gray, using the Chinese White pure for the high lights. You are then of course painting in body colour, and that on the whole is considered best for reproduction by either collotype or typographic "half-tone" process. It is quite possible, however, to reproduce washed drawings or pictures in transparent water colour, preserving the values of the originals: for this purpose use either Neutral Tint, Payne's Gray, Burnt Sienna or Brown Madder, or, if you choose, all of them combined. (See ILLUSTRATING, p. 48.)

FLOWER PAINTING.

I. ARRANGEMENT MODELS.

REMOVING flowers from their natural atmosphere and environment often robs them of the sunshine and shadow that gave them their greatest charm. When we set about painting them we must replace these conditions by the best substitutes that we can. This effort, quite as much as any that is made after the brush is taken in hand, decides the character of a study. It is hard for amateurs to comprehend all that depends upon effects of light and shade. They will pay the nicest attention to local colour, and practically ignore the conditions which interpret it.

No light is so trustworthy as that which comes from a single, large, north window. Sometimes, in town, reflections from opposite windows are troublesome, but one learns at what times to expect them and how to avoid them, exactly as one must avoid direct sunlight. Unless a window is very high, the lower part should always be screened; little hooks or wire nails may be put in at the sides, and a piece of dark cambric, with loops at the corners, stretched across. If you have had but limited experience in making original studies, it is best to concentrate all the attention on the flowers themselves, without introducing vases or any elaborate accessories, unless they are such as will allow their details to be deferred until the flowers are finished. Anything that calls for reflections and shadows upon its own surface, depending upon the flowers, will only rob the latter of time and attention. Further, one is less likely to produce a stiff, conventional study if he uses flowers alone. If they are cut flowers they may lie on a horizontal surface, or be fastened to a vertical surface, and may be upright or inverted.

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[1] That is to say, light and shade.

Different kinds of flowers are seldom represented together, either in pictures or decoration, as they used to be. The several varieties of the same species must therefore be relied on to furnish the brilliant and varied colouring which is essential to the treatment of floral subjects.

Flowers may be painted growing in pots, in which case there is no fear of their perishing before the work is completed. This is, as a rule, safer than substituting fresh flowers for those that have drooped, and thereby disturbing the arrangement. It is not at all necessary to depict the pot itself; the stems may be made to lose themselves in a sketchy way, or they may be painted as if they continued below. A rose-bush in full bloom makes a beautiful study, taken as you might see a central portion of it from an open window—below and above it is supposed to continue beyond the margin of the canvas. Climbers, like clematis and trumpet flower, appear more natural when treated in this way.

A pictorial representation of flowers should have breadth, which has been well defined as "the concentration of effect in the main idea," so that the picture is at once felt as a whole; fitness—the flowers and their accessories must accord with the sentiment to be conveyed; grace and variety in form, in parts and in the general effect; and a skilful arrangement of light and shade, combined with brilliant harmonious and varied colouring.

The first of these requisites is obtained by making some parts and qualities more prominent than others, so that the eye at once seizes upon the essential subject of the picture, the flowers; and of these, the ones that give distinctive character to the group. The accessories, while contributing to the effect of the whole composition, both as to form and colour, must be kept subordinate to the chief objects of interest, by being represented with less elaboration. They must also harmonise, as has been said, with the prevailing idea of the picture, and be such as might naturally be associated with the flowers. Roses, rare exotics and other elegant flowers, should have elegant surroundings—handsome draperies and *bric-à-brac*—while common ones may properly have a homelier setting. Wild flowers may be placed in rustic baskets, in some homely vessel of neutral or harmonising colour, or, better still, in a glass vase or bowl, by which means we can see the stems and leaves, which are often very beautiful in themselves. Or the flowers may be loosely thrown on the table, as if just gathered. In short, there is so large a field for the exercise of individual skill and taste in arrangement, that precise directions are unnecessary.

If landscape effects are introduced, flowers and background should be studied in the open air, in order that the picture may be in keeping, since objects present a very different appearance in the more diffused and brilliant outdoor light.

A well-known principle is, that the pyramidal arrangement is "the best, if not the only one, adapted to the representation of flowers," which means that, if the principal objects of the composition, including the flowers, were united by bounding lines, these lines should form an irregular triangle of some kind. While such a rule is a valuable guide to the artist who may make this figure the base of the composition, it should not be apparent in the work itself, but only discoverable by analysis. There must be grace of arrangement, not stiffness and formality; symmetry, without an exact opposite balance of form. Projecting flowers or hanging foliage may break the lines of the group; some of the former should be massed or overlapping especially toward the centre of the cluster, others more scattering; some should look toward, and others away from, the spectator, that they may have all possible variety of form and position. Moreover, the mass of bloom should be naturally arranged, and have the appearance of depth and roundness.

The horizontal line, forming the farther edge of the plane surface on which the objects are supposed to rest, must not equally divide the picture, but be drawn below the centre, the height being determined by the taste. In like manner the vase, or other receptacle, containing the flowers, should not occupy the very middle of the canvas, as such an arrangement is stiff and ungraceful; it should be placed to one side, and the same may be said of the floral part of the design. If drapery is used as a background to the flowers, some of the folds (which should be chiefly diagonal, so as to give contrast of line) may be brought forward to fill part of the intervening space; a few flowers, also, may be carelessly disposed, as if they had dropped from the cluster. Culture and experience will suggest many other expedients for promoting the artistic effect of the whole composition.

Our first attempt in colour will be made in flower-painting: not that, if carried to a high degree of excellence, this delicate branch of the water-colour art is not difficult enough to tax the skill of even the ablest painter, but because in its elementary stages a more encouraging beginning can be made without previous training than with either landscape or figure-painting.

It is best to begin with rather large, single flowers. Double flowers involve more problems, more modelling, and are to be avoided in the beginning. Deep bell-shaped or cup-shaped flowers present more difficulties than the flat, wide-open sort. Clusters of many small flowers massed together should be left until very much more skill is gained than we are supposing the reader to have now—for instance, the skill to paint from nature just enough of the prominent small blossoms and to suggest the multitudinous others, as in a mass of lilacs. If you paint each tiny blossom you lose the proportion and perspective and make the more distant flowers seem to be on the same plane as those that are near, and you thus lose all roundness of effect and all depth; while, on the other hand, if you generalise too much, you have only a picture of a haze, of a blur, of a tangle of worsteds, of anything the imagination of the unsympathetic observer may suggest, and you have lost all the shape and naturalness of your flower. To keep these, always draw the flowers truly.

We do not mean by this that you need make a minute pencil drawing before you begin to paint, for that would be so quickly obscured by the after-painting that only the general features would remain. We mean, draw the general shape correctly, accurately. If the petals have whimsical freaks in their turning, let us see them; if the stem stands up sturdily, draw it so; if the stem bends, it will show us by just the amount of the curve how heavy the flower is—how it would sway if the wind blew, how it would hang in the rain; or perhaps the stem has in its curve the history of its lot—how it has had to stoop to reach the light, how it had to twist out of the way of difficulties; or perhaps it is an inherited twist, such as the violet has, from generations of stooping. Whatever way it is, it is very important to the grace and truth of our flower to represent it so; it should never be made to twine when it does not care to do so, or to waver weakly, or to be thicker or thinner than it is in nature.

II. BACKGROUNDS.

A very important part of a flower-piece (or still-life) is the background and foreground, both or either, if not properly considered, being capable of entirely destroying the effect of an otherwise well-done study.

In the first place, the flowers—be they put in a vase, glass, or jar of some kind, or just simply laid down—should always be arranged against the background with which they are to be painted; for it is as important to study from nature the shadows and reflections of the background as it is to so study the flowers themselves. The correctness of "values" (that is, the proper relation of the light and dark of one colour to that of another) depends entirely on this.

The selection of the colour of a background calls for very careful consideration, for the same flower will appear quite differently when seen against different colours. For instance, a flower of a cool (bluish) pink would look very much cooler on a strong yellow, while the same pink would seem of a much warmer (yellowish) hue on a background of a greenish tint. A strongly contrasting colour will always "bring out" the flowers, even if it be kept in as light a key as the flowers themselves. Thus, a yellowish white flower will stand out perfectly on a background of the palest blue possible; or a pure white one with light gray shadows will stand out strongly against primrose.

In order to lay in a background smoothly—that is, without spots and puddles—it is always best to wet the paper, no matter whether the flowers were painted on wet paper or not; and we have stated our opinion that no mere beginner should work on wet paper.

For the background, however, the paper should be made thoroughly wet on the back or else by running the brush filled with clear water all over the part to be painted; not too near to the edge of the flowers though, as otherwise one is apt to run into the other, and so spoil both. The wash should be laid in evenly, although not necessarily in a perfectly flat tone, unless used for some decorative design, where all things should be treated in a flat manner, anyway. Above all, a background should be modest and retiring and "go back." It should form a part of a study, but not *the* part, and not attract the eye either by being spotty or too strong.

When ready to put in the background, prepare on your palette a good deal of the prevailing colour, enough to last you to the end. It is often fatal to stop in the middle of a wash in order to mix the same tone again. To this you may always add a touch of some colour or other while laying it in according to a shadow or a reflection you may see in nature.

With a full brush begin with your wash in the upper left corner, and from there go down and on *without*—and this is very important—retouching the parts just laid in. Unless you observe this precaution, you are sure to make spots and little lakes and "suns" all over the background, the parts just laid in being already in the process of drying when touched again.

If you do not intend to cover your paper entirely, begin at the upper left corner simply with clear water, and blend in the lightest shade of your background lower down in a cloudy way, allowing it to get stronger the nearer it comes to the flowers. If the foreground be of the same colour, carry your wash all the way down, and when it is all dry put on a second one, which will make the background gradually stronger until you come to the foreground. There ought to be a slight contrast, if you wish to suggest that your flowers are lying upon a table, a piece of board, or something of the kind. If the light in your room comes from the left, as it ought—for otherwise your hand would throw a shadow, so as to interfere with your seeing what you are doing—the tone of the background may be kept pretty light on this side of the flowers, getting darker on the right, where most probably the flowers or jar or glass would throw a strong shadow, unless they are posed far enough from it to leave the whole background light. In any case, however, be sure and paint it all in from nature, if you want it to be in harmony with the flowers.

There are certain colours of backgrounds that will always go well with certain flowers.

For Pink Flowers, such as roses, for instance, a light gray background always looks well and refined, the gray used being a cool, rather purplish one, made of Neutral Tint, or, if needed warmer, of thin Ivory Black. A light brown is good, too: use a thin wash of Vandyck Brown for that; or if a greenish tint be chosen, which is very pretty with all pink flowers, take a light olive green, and try to have it a different shade from the green used in the leaves. For the darker tones add some Vandyck Brown or Neutral Tint, but use them lightly, so as to avoid too heavy or black a colour. For very strong pink, almost crimson, flowers, or for bright red ones (like poppies), a faint gray background looks best, the flowers themselves being so brilliant in colour that the background must be as quiet as possible, in order to avoid crudeness and vulgarity.

White Flowers look well on almost anything except gray, which is the colour of their shadows, and therefore had better be avoided in the background. Suitable backgrounds are a light blue inclining to turquoise, made of Antwerp Blue; pink, made of Rose Madder and a touch of Yellow Ochre; Light Red, which suggests a terra cotta; or a pretty strong yellow, made with a light wash of Gamboge and a touch of Indian Yellow and Black for the shadow. A lavender tint, made with Rose Madder and Cobalt, would also look very well.

The best background for a white flower is always the one that makes it look whitest, and to get this the background need not necessarily be dark, as some people might think. In fact, a very light background looks much more delicate, and need only contrast enough to bring out the white. The flowers themselves, of course, must be treated lightly, too, and must have transparent, luminous shadows.

Strong Yellow Flowers, such as chrysanthemums, require that the background shall be subdued, and a tone like Vandyck Brown, or, still better, Brown Madder, should be selected, both bringing out the yellow without being really dark or too strong. A greenish gray made of Burnt Sienna, Antwerp Blue, and a touch of Brown Madder, is good also, or any other rather dull medium tint.

A Delicate Yellow, like that of a yellow rose, with almost white lights, or a primrose, should have a much paler background; for instance, a thin tone of Light Red, with a touch of Cobalt Blue, or a purplish tone made of Rose Madder, Cobalt, and, if too purplish, some Olive Green. A tint mixed of Raw Sienna, Antwerp Blue, and Rose Madder makes a soft, either bluish or greenish gray, according to the use of more or less of the Antwerp Blue or the Raw Sienna.

For Violets, a pretty strong green looks very well, either made with a wash of Hooker's Green and shaded down into olive, or else a soft hue of greenish gray, made of Neutral Tint and Yellow Ochre. The latter we would suggest for violets which are of a rich, dark purple; the former looks well with violets of a lighter hue. Other available backgrounds for violets are a light stone gray, a pink gray, a blue gray, a deep crimson or reddish brown, a fine pale yellow, a deep orange yellow, a tone of old gold.

Various-coloured Pansies, grouped, look pretty on rather a warm gray, for which use Lamp Black, or, for a more greenish gray, add Olive Green and Cobalt.

A General Rule.—You can be pretty sure of being successful with your background, if you remember that light and delicate flowers should have an equally light, delicate background, as a heavy one would kill them; flowers of very strong colour, a neutral one, be it light or dark, leaving all the effect to the flowers; and very dark flowers, a medium light one.

If the background can be done with one wash, it is all the better, as you may spoil it by going over it. If, however, it is necessary to put on a second or a third wash, then let the first one be dry before touching it a second time, and when you go over it do so quickly and lightly, so as not to take off the colour underneath. In this way you can go over a background a number of times if, as often happens, it dries out lighter than was intended, and thus makes successive tones necessary.

III. PREPARATION FOR WORK.

With your "solid sketching block" before you, seat yourself so that the light will fall over your left shoulder. The light should come from one window only, and if you can shut it out from the lower part and receive it from the upper panes only, your shadows will be the clearer and deeper. If there are other windows in the room, darken them.

Have two glasses of clean water at your right hand, one to wash the brush in, the other to wet the brush for the paint; and your box of colours, sponge, blotting-paper, and a piece of crumb of bread. Your brushes and a well-pointed lead pencil should be within easy reach.

Put on the palette only such colours as you expect to use. Very little of some will do, but put on enough of those of which you will need most. If you are using moist colours in pans—which are the most suitable—a wet brush will transfer to the palette as much as you require. The object of putting colour on the palette is to enable you to vary the tint at your pleasure. You thus soon learn to know the various shades and tints which can be produced by combinations. It will be only by actual and careful observation that you will become familiar with the beauties of light and shade in your model. But you will be surprised to find how rapidly your eye will become educated in detecting the most delicate gradations even in a white flower.

Be deliberate in your preparations for getting to work; for, on the care with which they are made, much of your success will depend.

IV. PANSIES.—A FIRST ATTEMPT IN COLOUR.

For our first model, we will select a pansy, the simplest garden-flower, perhaps, that can be put before the beginner. We will suppose it to be pale yellow, streaked towards the centre with purple.

Draw the outline very carefully, with every little scallop in the edges, and indicate the purple streaks. Choose the prevailing tint of the flower, which perhaps will be Lemon Yellow. With enough water in the brush to cover the whole surface of the drawing, begin at the left-hand corner and make the strokes of the brush toward the centre of the flower. Do not be timid. Carry the colour boldly up to the outline. Try to put in the whole strength of colour *at once*. The result will be much more effective than going over the wash a second or perhaps a third time. For the petals on the right side the strokes must, of course, be made towards the centre also, but from the right. Then from the centre down, on the lower petal, following with care the shape and making the strokes converge with the sides of the petal. Leave the centre entirely white. By the time you have found your Ivory Black and placed a little dash of it on your palette, the local tint will have dried. To this local tint on the palette add a little black; experience only can tell you how much to use in shading between the petals of the pansy.

It is safest to paint shadows sparingly in the beginning, for they can be increased in depth later; but if you can do it, it is better to approximate at once—*i.e.*, with the first stroke—the whole depth of shadow required.

You will notice a faint shadow under each petal as it overlaps the next, and there may be a little fold in the petal itself. Put this in delicately with the yellow and black mixed. In places the yellow may require strengthening. Do this also. With a little more black in the shading colour on your brush touch that wonderful purple spot in the centre. If the yellow is quite dry by this time, mix on your palette a little Carmine and Ultramarine, or Crimson Lake and Antwerp Blue, to the quality of purple you wish to represent; then, with the finest pointed brush you have, copy accurately the delicate pencilling of purple on the lower and two side petals of the flower. Paint the stem solidly in green, made of Gamboge and Antwerp or Prussian Blue; pointing it on the shaded side with a little more colour.

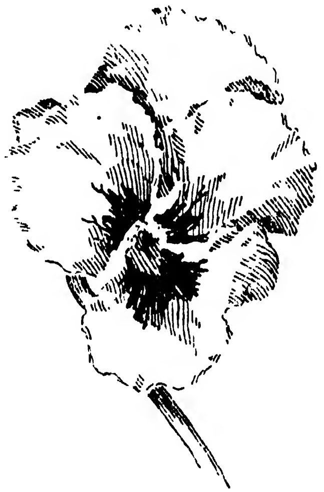

FIG. 69.—SIMPLE FIRST MODEL FOR FLOWER PAINTING.

When the whole is perfectly dry, it may require some touching up to strengthen. A study of this kind may be improved by painting a cast shadow on the background, but it is better not to attempt this at first.

Purple and Reddish Yellow Pansies.—The colours of the same names as those used in painting these flowers in oil (see p. 158) may be used, with the following exceptions:—Sepia is substituted for Bone Brown, Rose Madder for Madder Lake, Cobalt for Permanent Blue, and Lamp Black for Ivory Black.

V. VIOLETS.

Violets are a good subject for a novice, because they are simple in colour. Choose the single sort, and arrange them in a loose group of, say, two or three, with a leaf and a bud or so, against an upright sheet of paper as a background. Draw all the small details of the flowers accurately—stems and bud and leaf. Then record the gray shadow which they cast upon the paper. See if it is all gray, or if, perhaps, it has yellow or green or purple in it; but decide about that before you touch brush to paper, for the mixing and stirring is better done in the mixing saucer than after the tint has been placed upon the paper, where it is well to leave it undisturbed. A local tint of purple should first be washed on for the blossoms. For this mix Cobalt, Yellow Ochre (very little), and Rose Madder, with a touch of Lamp Black to qualify the colour—*i.e.*, to avoid crudity.

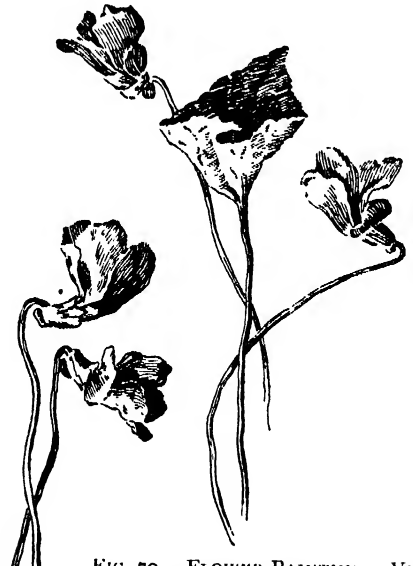

FIG. 70.—FLOWER PAINTING. VIOLETS.

Where the highest lights occur, leave the paper almost clear at first, running over them a very thin wash of the mixed violet tint. In the deeper shadow tints of the petals use Rose Madder, Cobalt, and Sepia, and where the little yellow centres are seen, touch them in lightly with a small, pointed brush, mixing some Cadmium and a little Vermilion; shade these with Yellow Ochre, Rose Madder, and Sepia. Paint the calyx and the green leaves with general tones of green, massing the shadows, washing the colour in rather strongly at first, though not any darker than the value of the lighter leaves. Add the veins and details of serrated edges in finishing. The shadows should be kept transparent, and not blended too much with the lights; keep the forms crisp and fresh, showing in parts the edges of the washes where they intermingle.

For the leaves and stems, use Cadmium, Antwerp (or Prussian) Blue, Rose Madder, and Lamp Black, adding Sepia in the shadows, and a little Yellow Ochre where the warmer tones are seen.

Backgrounds.—The following are among the backgrounds that may be suggested:—

Pink-gray, made of a wash of Rose Madder, Sepia, and very little Yellow Ochre.

Light stone-gray, made with Sepia, a little Cobalt, and Light Red.

Blue-gray, made of Cobalt, a little Rose Madder, Yellow Ochre, and Lamp Black.

Deep crimson, or Reddish-brown, made with Madder Lake, or deep Rose Madder with Sepia, and a very little Lamp Black to gray the effect.

Pale yellow, obtained by mixing a light wash of Cadmium with a little Sepia and a touch of Vermilion. If Lamp Black is added, the tone becomes greener.

Deep Orange Yellow—very effective with violets—made by mixing Yellow Ochre, Cadmium, a very little Rose Madder, and either Sepia or Lamp Black, according to the quality of colour desired.

Old Gold, produced by adding more Yellow Ochre and Sepia to the above combination, with very little Cadmium. Where shadows are cast upon the background they should be made from the local colour of the ground selected, to which may be added more Sepia and Lamp Black.

After the background is finished, the out-

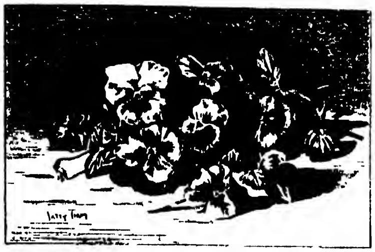

Fig. 71.—Flower Study. Yellow, White, and Purple Pansies.

Background, shading from light olive to brownish-green. The foreground will need a little Raw Umber and Vermilion added to the colour used in the background.

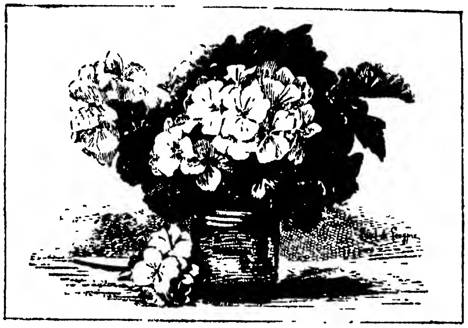

Fig. 72.—Still-Life Study. Red, Pink, and White Geraniums in Gray-Blue Stone Mug.

Band with brighter blue. Warm light blue-gray background. The arrangement affords a good study of pure colour.

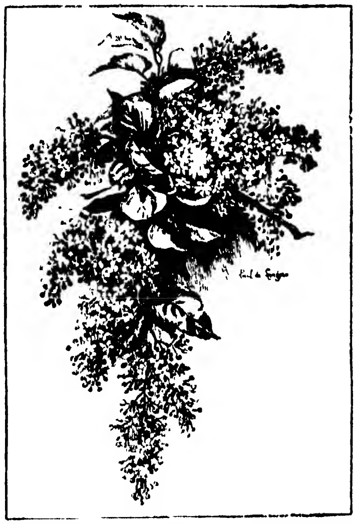

Fig. 73.—Flower Study. White and Coloured Lilacs (Suspended).

The white blossoms occupy the right and left of the picture, just below the small top spray, which "goes back," as also do the white spray to the left and the spray of purple blossoms nearest the bottom. The background is white, except for a touch of warm light blue, suggestive of sky at the top, and touches of warm light gray, almost following the outline of the bunch to the right and suggesting shadow.

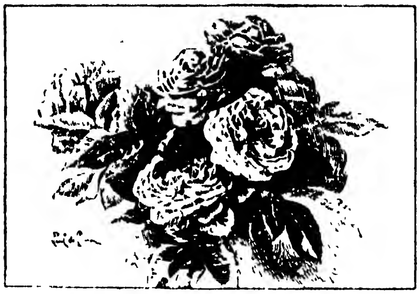

Fig. 74.—Still-Life Study. Bunch of Pink and Red Roses in a Glass Vase.

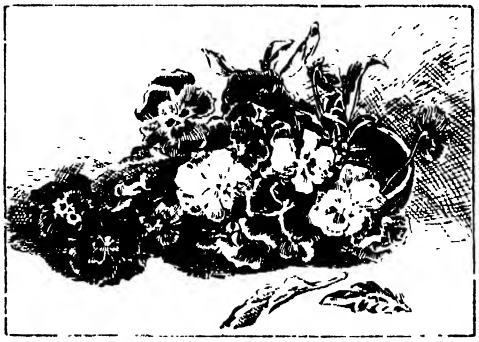

Fig. 75.—Still-Life Study. Pansies (Various Colours) in Earthenware Crock.

The darkest flowers to the left are bluish-purple, and those towards the right reddish-purple; yellow near centre. Background and foreground warm light grayish-green.

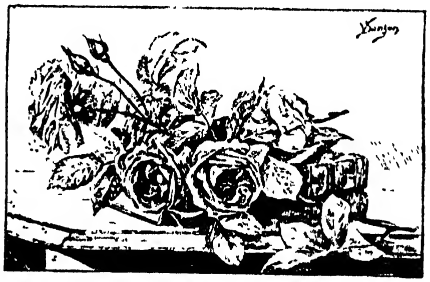

Fig. 76.—Still-Life Study. Roses on Book and Polished Table.

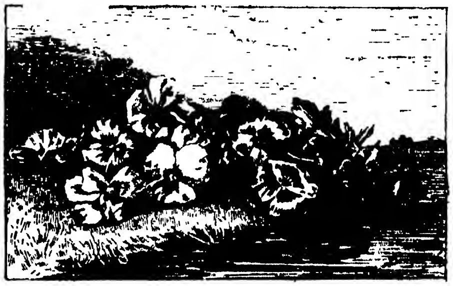

Fig. 77.—Flower Study in Landscape. Pansies Reflected in Streamlet.

lines of the strongest shadows in flowers, stems, and leaves are retouched and strengthened with small-pointed brushes.

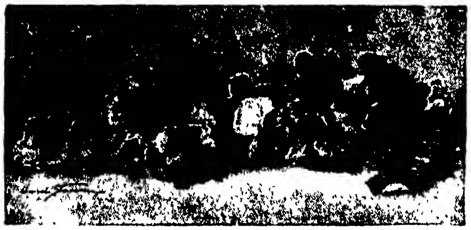

FIG. 78.—YELLOW PANSIES. (Greenish-gray background.)

VI. LILACS.

Like all flowers made up of masses of little single blossoms, lilacs are difficult for the beginner, not so much on account of the colour as of the drawing and the proper distribution of the masses of light and shade that always constitute a very important feature of such a study. Nothing is more trying to the cultivated eye of an artist than to see a mass of small flowers, like, for instance, a bunch of violets, hydrangeas, or lilacs, treated so that you may make out every single flower separately all over the bunch or cluster. In nature you can only see distinctly and separately a very few of them, only those directly in front of the eye; the rest are as a blurred mass, with perhaps the light striking the edges of a few single blossoms. Paint the flowers just as you see them. Ignore each flower as a separate thing, really looking the same and having the same shape as the other would if you were to pull it to pieces. You are not supposed to illustrate a scientific work on botany, but to render from the artist's point of view what you see in nature.

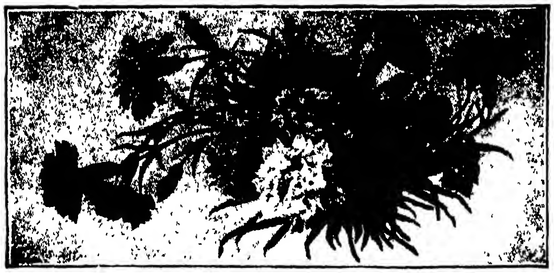

FIG. 79.—FLOWER STUDY. WHITE, PINK, AND RED CARNATIONS.

The right-hand flower of the principal group is deep, rich red. Warm blue-gray background.

Sketch in the lilacs first very lightly, with a hard lead pencil—at least those that you see plainly—and suggest slightly the outline of the whole bunch. Then mix, for the lightest shade of purple, Rose Madder and Cobalt Blue, more or less of the one or the other, according to the hue of the flowers; for the half-open ones and the buds, you may sometimes have to use almost pure Rose Madder. For the shadows, go over them with the same tint, only a trifle deeper. For the little dark spots in the centre, put in a touch of pure Olive Green and sometimes a trifle of Gamboge. To fill in the spaces between the single flowers, which are more or less open according to the fulness of the kind of lilac, use some warm tint of Rose Madder, Raw Sienna, and Cobalt Blue, sometimes with Gray added, or anything that seems to you to come nearest to what you see in nature.

The parts in shadow must be treated in mass, only single petals or flowers being left light.

The leaves are of a very tender light young green, and are done with Gamboge and Cobalt Blue, with some Yellow Ochre added; if otherwise, too crude. This for the light, which, however, may be bluish in parts; then use more Cobalt. For transparent greens in the shadows use Indian Yellow and Cobalt, for even the shadows must suggest a light tone of green.

VII. SWEET PEAS.

To paint a mass of these flowers calls for considerable skill. The novice would do better to select only a few sprays for study at first. Place the ends of the stems in a small bottle and hang it against some agreeable background—a light gray-green would be suitable. Keep the whole composition light. The shadow of the blossoms against the background will be deep enough in places to relieve our small model from monotony. Do not use very rough paper.

Draw in the flowers, and some of the leaves and tendrils too, for without its own leaves a flower looks forlorn. Draw them a *little* coarser than they need be ; for the pencil lines will belong to the background, and a *very little* on each side will thus be taken off, and we avoid making them too attenuated in the first place.

The shadows which fall upon the background are not sharp or clearly defined, and they fall toward the bottom of the paper background ; so as you come to their near neighbourhood add more of the colour of the background to the wash you are using and add to that whatever tint you see predominates in the shadow. If it should be lighter in any space than you have tinted it, take up the superfluous colour with a damp sponge, or an absorbent rag, or a piece of blotting-paper. When the background is dry enough not to go branching into the flower spaces at a touch, begin with the lightest tint of the lightest blossom. In the highest lights it would sometimes be well to leave the white of the paper untouched.

The middle innermost petal is generally white even in the most highly coloured sweet peas, but it acquires a lavender or a pink in its shadows from the colour of the overhanging petal. In the main you will see the shadows greenish in the lightest blossoms. Do not get them a colourless, dead gray. Select the colour that the model calls for and put it in with the right intensity in the right place. Sometimes one clear wash—Carmine over blue, for instance—gives a more brilliant effect than if mixed in the saucer before putting it on ; but if you go with indecision softly over the petals again, and yet again, it gives an unsubstantial, woolly look that fails to represent the flower's texture, even if all else—the colour and form—be perfectly correct. Be careful not to use your paint too dry. What exactly is too dry you will have to learn for yourself

The same colours may be used as are given (p. 165) for painting sweet peas in oil colours, with a few exceptions. Substitute Lamp Black for Ivory Black and Rose Madder for Madder Lake.

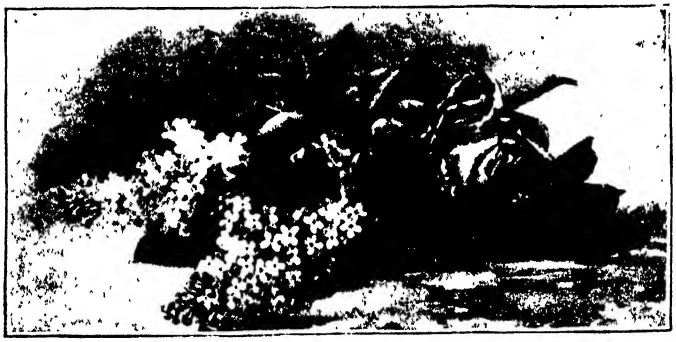

FIG. 80.—FLOWER STUDY. A RICH CRIMSON ROSE, AND WHITE LILACS.

The paper is reserved for the white blossoms until the surrounding effects of colour are well established. The background (a delicate wash of warm gray) may be put in first of all, the outlines of the blossoms being carefully secured in the preliminary wash.

VIII. NASTURTIUMS.

The glowing yellow, orange, and vermilion of the nasturtium call for all those colours on the palette , but do not forget in their riot of colour the shadows and half-tints, or the result will be crude and garish. In arranging them to paint, do not let all be so brilliant and in such full light that none will especially please or attract.

The colour of a certain red blossom can be approached most nearly by painting an under-tint of orange or vermilion and, after allowing those colours to dry, glazing them with Rose Madder. Such a course always has the drawback, however, that the flower may fade before the painting of it can be resumed, and a flower exactly like the first model may not be found again.

Red Nasturtiums.—Rose Madder, Yellow Ochre, Sepia, and a little Lamp Black are combined for the local tone. The same colours deepened will give the shadows; use very little Yellow Ochre. In the high lights, wash in a tone made with Vermilion, Rose Madder, a little Cadmium, and a little Sepia. In parts, run pure washes of red and yellow over the petals to keep the colour fresh. The yellow stamens are painted with Deep Cadmium, a little Sepia and Rose Madder.

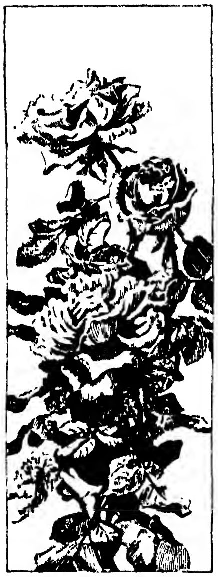

FIG. 81.
PANEL OF ROSES.

Yellow Nasturtiums must be kept brilliant and pure in colour. Wash in at first the general tint of predominating yellow (light or dark), and add the shadows after this is dry, with a crisp touch. Leave the paper clear for the high lights, and wash the pure colours thinly over when possible. For the local tone of yellow, mix Cadmium, Yellow Ochre, a very little Rose Madder or Vermilion, according to the tint, and a little Lamp Black. If this seems too green, try Sepia instead of Lamp Black, adding the washes of thin Black later where the soft gray tint is needed. The red streaks are painted with Rose Madder, a little Cadmium, and Sepia; in some parts Vermilion is used to give a brighter effect of colour. These colours are repeated in the shadows with less Yellow Ochre, and where the dark streaks occur, some pure Rose Madder and Sepia, with very little water, are put on with a fine-pointed brush.

The leaves, which are delicate blue-green, are painted with Lamp Black for the local tone, with the addition of Sepia and a little Cadmium in the shadows. Leave out the lights at first, and in finishing run thin washes of Cobalt, Yellow Ochre, and Rose Madder over the paper.

In finishing, take out cleanly the high lights which have become covered up, using a bit of thick blotting-paper cut to a point. Use a small-pointed brush for drawing the delicate stems, and add a little more Sepia to the colours given for the blue-green leaves.

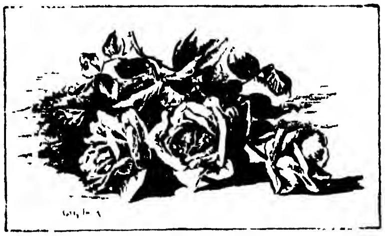

FIG. 82.—FLOWER STUDY. LA FRANCE ROSES.
Light, warm gray background.

IX. ROSES. PEONIES.

Two extremes of error in painting roses are common with beginners. The extreme into which a careful, painstaking student is most liable to fall is over-elaboration of detail and a timid dryness of colour that turns the fresh-coloured youth of the flower into a withered old age. The other extreme is in the fault of omission; here the painted rose is only a featureless ghost of a rose. If the rose is painted merely as an accessory to a figure or a landscape, there may be no reason why it should be more than suggested; even then it ought to be solid, and should receive and cast shadows. But if the rose is the picture itself we must tell our tale completely. We must show the flower's shape and colour, as it is revealed by the form and intensity of its shadows and the beauty of its tints.

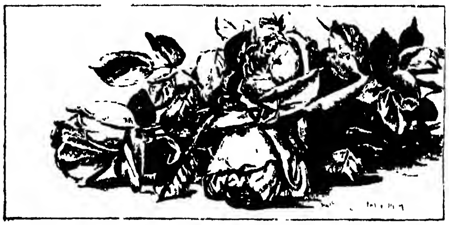

FIG. 83.—FLOWER STUDY. JACQUEMINOT ROSES.
Yellowish-gray background.

Where a petal reflects upon a petal and it is in shadow, the colour is not only deeper, but warmer. Down in the centre of a pink rose, where pink is reflected and re-reflected, or where the light shines through the petals also, we see a deep pink shadow, warm and rich. In other places the shadows tend to greenishness from the reflections thrown upon the rose; in others again toward, a purplish pink or grey. As in white flowers, so in light pink or light yellow flowers, the colour of the shadows depends upon the surroundings. The more deep and vivid the blossom is in colour, the less easily do the surroundings affect the local colour present in the shadows.

When you wish to paint a full-blown rose, look into its convolutions of petals. The outer petals are large and simple, and the inner surfaces they roll back to show are lighter than the pinker growing centre. The shape of the petals is expressed in the pink grayness of the shadows near the light: the white pink light, the yellow pink reflected lights, and the deep central warmth of colour.

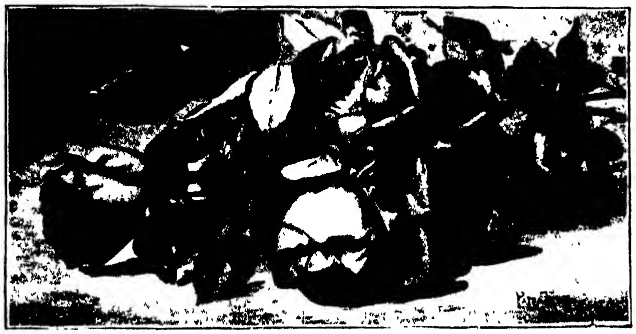

Fig. 84.—Flower Study. Jacqueminot Roses.
Greenish-gray background.

Bride Roses should have a thin wash of very much diluted Gamboge over the whole flower, excepting on the curled-over petals, where the highest lights occur. Then put in your deeper tones with pure Gamboge (or Aureolin); in the shadows mix with Neutral Tint, and if too cold or green in tone add a touch of Indian Yellow. Put some deep touches of Indian Yellow in the centres, and even now and then some Raw Sienna. The shadows of the outside petals occasionally have a touch of Olive Green, or, if lighter, Hooker's Green. The cool, gray shadows of the single petals, that seem almost purplish by contrast with the warm yellow, are made with Cobalt Blue and Rose Madder, or if too purplish, simply with Neutral Tint.

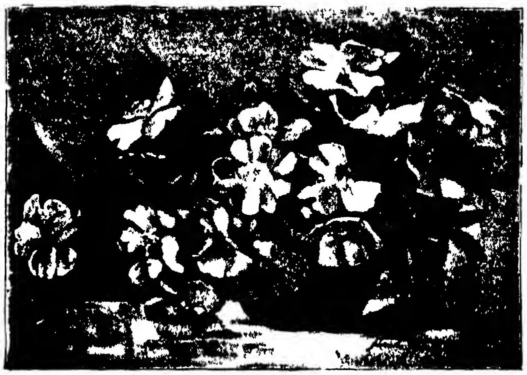

Fig. 85.—Still-life Study. Wild (Pink) Roses in Gray Stone Jar.
With light, warm greenish-gray background and cool green leaves. This should be dainty and harmonious in colour.

Yellow Roses (Pearl or Tea Roses).—Put a tone of thin Cadmium Yellow or Indian Yellow over the whole rose; the colours for the shadows are the same as given for the Bride Rose, except that you keep them in a warmer and more pinkish hue, with a touch of Rose Madder instead of green, and Indian Yellow instead of Gamboge or Aureolin. A tea rose

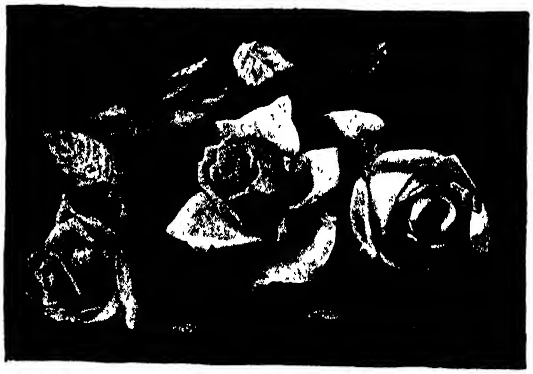

Fig. 86.—Flower Study.
The rose at the left is pale yellow, the second pink, and the one at the right more "rose colour." Greenish-brown background.

usually has a touch of Rose Madder in the yellow all over.

Catherine Mermet Roses.—A thin tone of Rose Madder is put over the whole rose. The bluish shadows are painted with Rose Madder and a touch of Cobalt Blue, and the deep, warm ones with more Rose Madder and a touch of Indian Yellow ; in the deepest shadows of the outside petals use Madder and Raw Sienna, and often a touch of Olive Green. Be very careful to preserve your values, and be sure not to put too heavy or black shadows in *light* roses of any colour. No strong blacks or browns should ever be used. A gray shadow can be painted with Cobalt and Rose Madder, and if too purple, Yellow Ochre will be sufficiently strong for that of any light, delicately coloured rose.

La France Roses.—Paint the rose over with a thin tone of Rose Madder or Crimson Lake, leaving the high lights on the curled-over petals white, and deepen the shadows with the same, the gray ones having a little Cobalt Blue mixed with the other colour, or even a thin tone of Neutral Tint. Where the pink is stronger or transparent, and therefore has a warmer tone, add some Scarlet Lake.[1] The La France Rose is usually on a bluish shade of pink, but do not therefore feel bound to mix blue everywhere with the pink, but simply omit yellows, Rose Madder and Crimson Lake both being of a bluish tint themselves.

Wild Roses, being of either one of the above-mentioned shades of pink roses, are to be treated in the same way. The yellow centres are done in Aureolin, Indian Yellow, or Cadmium, according to the exact shade in nature.

Rich Purplish Roses, like the "Duke of Edinburgh," "Sultan of Zanzibar," and "Sultan of Morocco," should be laid in with a rather solid tone of Scarlet Lake and Rose Madder.

Rose Madder and Pink Madder, both excellent colours and perfectly permanent, are too transparent to render the solidity of colour seen in such roses. The shadows ought to be deepened with strong Crimson Lake (not a very permanent colour either, but better than Carmine and indispensable for rich, deep tones). The outside of the petals is decidedly bluish, and there use Cobalt Blue with the crimson. For the deepest touches in the centres, and also for the large, hollow, outside petals, put one tone of Crimson Lake over the other two or three times, sometimes adding a touch of Burnt Sienna, and you will get the richness of colour without getting them black, as will invariably happen if you add Brown Madder or any brown or black. The main thing in all roses is to get the values and *keep them in tone.* A pink rose should be a pink one, not a pink and black one ; a red one should be red, and not red and brown spotted ; and a white one not white and black, or a yellow one yellow and black.

General Jacqueminot.—This is one of the most difficult of all roses to paint, for the reason that it is almost impossible in water colours to preserve the rich, velvety red. The local tone is put in with Crimson Lake and Indian Yellow, or, if darker, with Burnt Sienna. The shading is done with Crimson Lake, Brown Madder, Burnt Sienna, and sometimes Neutral Tint or Vandyck Brown. The water colours will always sink in to a certain extent, and often look cold when dry. To remedy this, put a thin tone of Crimson Lake, mixed with a touch of Cadmium, over the whole rose, shadow and all, when perfectly dry. This must be done quickly and in one touch, so as not to mix this tone with the colour underneath and make it spotty and smeary.

The Leaves of Roses are as characteristic in their way as the flowers themselves, and should receive as much attention from the painter. The leaves of the Mermets and Bride Roses, which are more or less similar in appearance, have a light, delicate, but *green* green, smooth surface, with the veins only slightly indicated on the upper side. Take for these Aureolin and Antwerp Blue (or Cobalt), also Hooker's Green, the highest lights being a trifle colder, with more blue and sometimes a touch of Rose Madder to soften the green, if too strong. The same leaves in shadow should yet be green and

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[1] This is not a safe colour, but there seems to be no satisfactory substitute for it. The best chance of preserving it is to avoid mixing it with other colours and glazing it thickly with gum arabic.

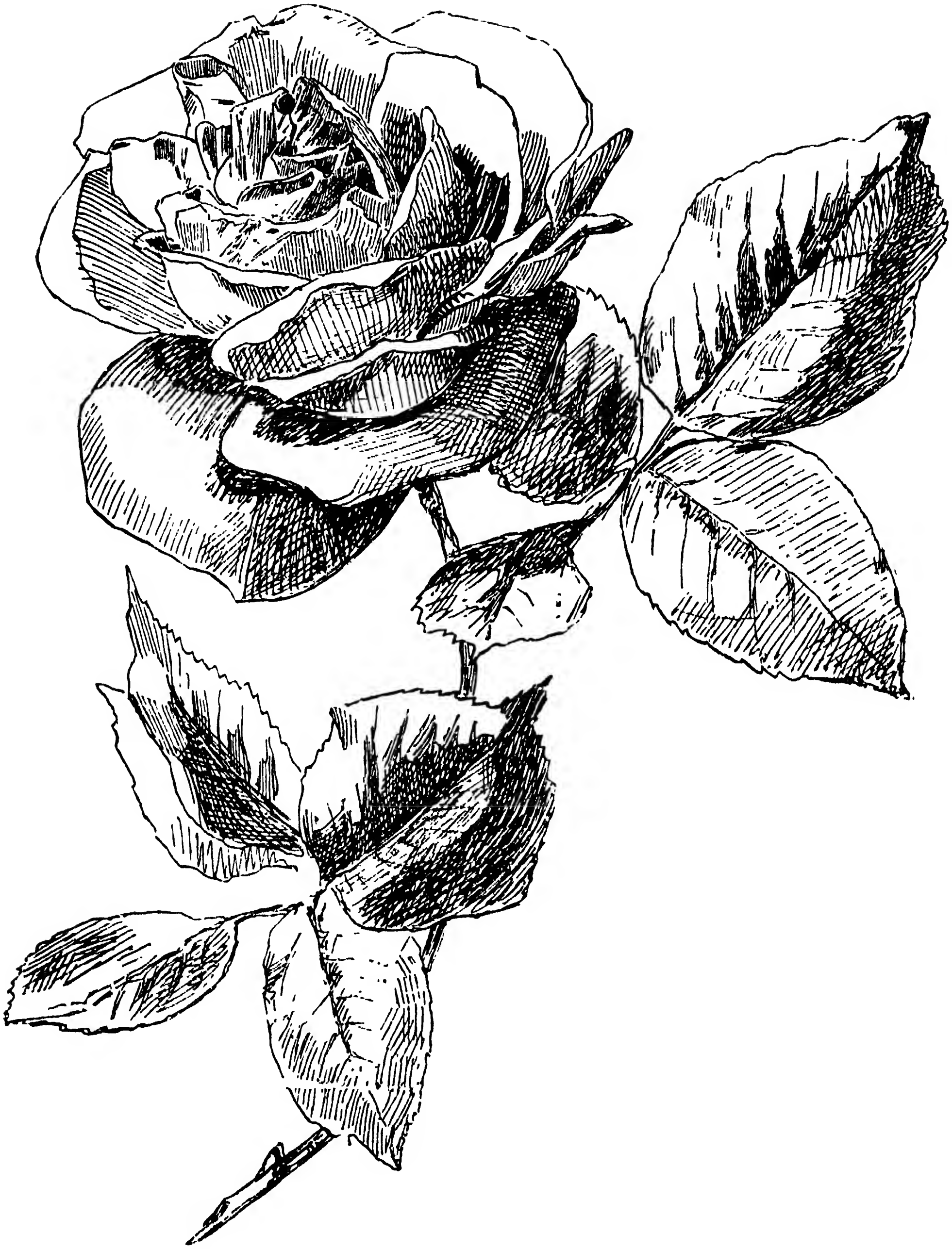


FIG. 87.—"CATHERINE MERMET" ROSE. PEN DRAWING BY CAMILLE PITON.

not blackish, and may be put in with Indian Yellow and Cobalt or Antwerp Blue, and if necessary a little Rose Madder or Light Red.

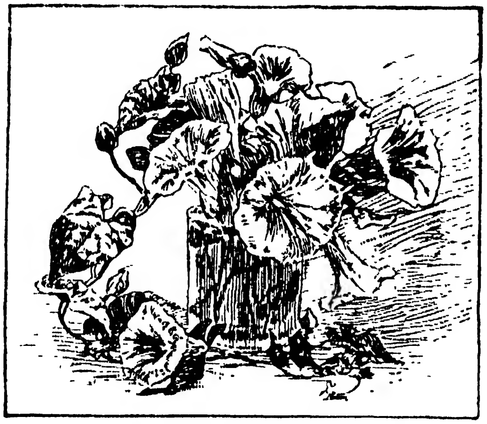


FIG. 88.—STILL-LIFE STUDY.
CONVOLVULI IN A GLASS OF WATER.

If the veins show at all, draw them in with a little stronger tone of the same colour, and blend them off on one side into nothing. The back of the leaf is of a delicate shade of light green, and is done with a very thin wash of Cobalt or Antwerp Blue and some Yellow Ochre. The veins on that side, being raised, are usually the lightest part, and are to be left white; if too hard that way they may be covered with light Yellow Ochre later on. The shadows underneath the veins, which make them appear raised, are gray, and are put in with Cobalt Blue, Ochre, and Rose Madder.

The leaves of the Yellow Pearl Rose are particularly beautiful to paint. They are a sort of dark grayish or, often, brownish green, with strong high lights. Cobalt Blue, Raw Sienna, and a touch of Rose or Brown Madder will make a good tone. The edges are often curled under, and therefore appear darker, and should be accentuated with a few broken touches of Olive Green. The backs of these leaves are very pinkish. Use Rose Madder pure (or with a touch of Cobalt Blue added) or pure thin Brown Madder. The veins can be drawn in with Crimson Lake, if they are of a strong red.

The leaves of the large purplish roses are, as a rule, of a duller green—Indian Yellow, Antwerp Blue, and some Light Red—or if stronger, the latter is left out. In the shadows Olive Green and Antwerp Blue may be used.

Peonies.—For the white blossoms a delicate gray in the shadows is made with Sepia, Cobalt, Yellow Ochre, and Rose Madder. The lights are kept clear, or faintly washed over with Yellow Ochre and Rose Madder toned with a very little Lamp Black. In the half tints, Cobalt is run faintly through the local tone. Paint the centres with Vermilion, Rose Madder and Cadmium, and add Lamp Black, Cobalt, and Light Red in the deeper parts. Run pure Cadmium and Vermilion in crisp touches where the stamens are sharply defined.

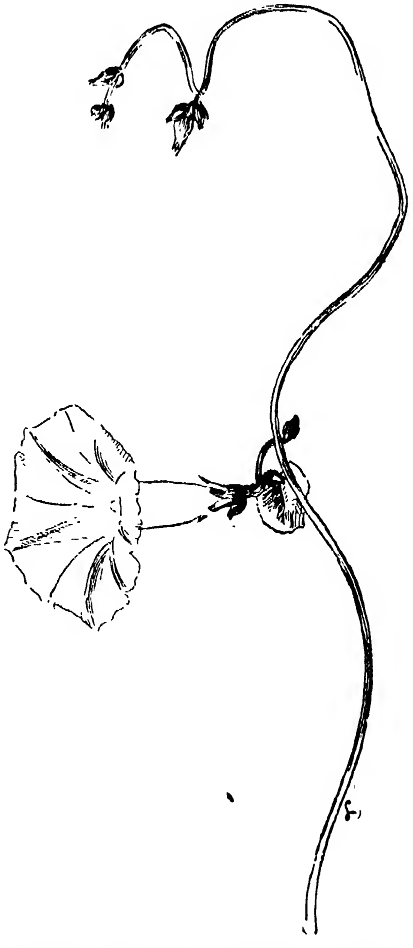


FIG. 89.—CONVOLVULUS (Hedge Bindweed).

For the leaves use Antwerp Blue, Yellow Ochre, Rose Madder, and Lamp Black; add Sepia and Burnt Sienna in the shadows. Vermilion may be substituted for Rose Madder in the high lights. For the stems, wash in Sepia, Cobalt, and Rose Madder, adding Yellow Ochre in the lighter parts.

X. CHRYSANTHEMUMS. ASTERS.

These highly decorative flowers cannot be painted satisfactorily by the dry method.

Use medium rough Whatman's or "O.W." paper. Damp it thoroughly, and then stretch it over a board or wooden stretcher, pasting the edges all around the under margin of the board. When the paper is dry, draw in the outlines of the study with a hard pencil, outlining each petal lightly, each leaf and stem. Then with a sponge damp the whole paper again.

Pure Yellow Chrysanthemums are painted with Light Cadmium, a little Lamp Black, and a little Yellow Ochre for the local tone. In the shadows, which should be kept warm, mix Sepia with Yellow Ochre run in and the colour deepened with a little Rose Madder. Over the clean paper the high lights are washed in with Cadmium, Yellow Ochre, and a very little Lamp Black. In parts, where soft blue-grey and violet half-tints are seen, Lamp Black and a little Rose Madder are used, with sometimes a very little Cobalt.

When the chrysanthemums appear richer in colour, showing undertones of warm, light yellow, deepening into orange in finishing, a small brush is used, with some Sepia, Cobalt, and Deep Cadmium, almost pure. These in combination will serve for drawing in the small shadows behind the petals, and also to define clearly the outlines in certain points.

Wash the high lights in crisply, using for the palest yellow flowers Cadmium and a little Sepia, adding a touch of Yellow Ochre near the centres. Where the petals show pink or reddish tips, the pink lights are washed in at the last, and the colours used are Rose Madder, Yellow Ochre, and a little Lamp Black. In the deeper touches of shadow add to the local tone Rose Madder, Light Red, or Sepia, and sometimes a little Cobalt.

Red Chrysanthemums.—Where the colouring is very rich and dark, it is sometimes necessary to repaint once or twice before securing the desired shade. A full crimson flower may be painted with a general wash of Rose Madder, Sepia, a little Lamp Black, and Yellow Ochre. The high lights are washed in with Rose Madder and a little Yellow Ochre at first. Another wash is run over the first when dry, and this shows more Rose Madder. In the highest lights, mix Rose Madder, a little Lamp Black, and a touch of Vermilion.

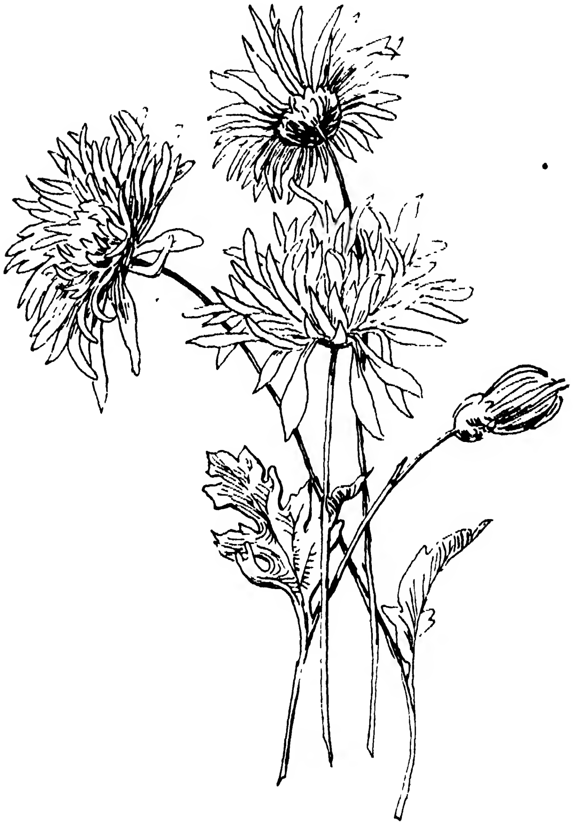


FIG. 90.—CHRYSANTHEMUMS.

Cut some thick white blotting-paper to a sharp point, and use this in taking out the narrow lights at the ends of the pointed leaves.

Where a half-tint needs softening, run a thin wash of Cobalt, Lamp Black, and Light Red over the edges of the shadow.

Leaves and Calices.—The colours used for the local tone of the green leaves and calices are Antwerp or Prussian Blue, Cadmium, Rose Madder, Lamp Black. In the shadows add Light Red, and substitute Yellow Ochre for Cadmium. In painting the stems, mix Sepia with Light Red and Cobalt, adding Yellow Ochre in the deeper lines of shadow and underneath the petals.

Use fine-pointed sable brushes in finishing small details. If more warm colour is needed in any part, wash over the petals when quite dry with small, crisp washes of Rose Madder and Yellow Ochre, subdued with a little Sepia or Lamp Black. Occasionally a touch of Light Red and Yellow Ochre or Deep Cadmium will enrich agreeably the under petals. Where the lightest petals almost vanish into the background, a wash of Cobalt, Rose Madder, and Yellow Ochre gives a delicate gray tone.

White Chrysanthemums.—The paper is left clear for the lights, and a delicate tone is washed over the surface to give warmth before putting in the shadows. For this we mix Lamp Black, Yellow Ochre, and a very little Vermilion. When this is dry, wash in the shadows with Lamp Black, Rose Madder, and a very little Yellow Ochre. Where deeper touches of colour occur, add a little Burnt Sienna and Sepia. Madder Lake or Rose Madder is always useful in deepening the reddish tints.

The Stems and Calyx are warm green in colour. For them, mix Antwerp Blue with Cadmium, Vermilion, a little Raw Umber, and Lamp Black. In the shadows, deepen this tone with Rose Madder, and add a little more Blue, with Lamp Black. If the under side of the flower becomes particularly illuminated by some chance ray of light, take advantage of it, and, with a finely pointed brush, increase the high light, adding more Cadmium and White to the local tone.

The background may be varied according to taste, though, generally speaking, some shade of warm, soft gray is most acceptable. If the scheme of colour is kept light and delicate, a rich maroon or deep gray background may be used. If, on the contrary, the shadows are accentuated, and the lights kept low in tone, a delicate hue of stone gray or pale yellow, blue or violet-gray may be preferred to relieve the pervading tint of the flowers.

Draw the stems and slender leaves carefully with a pointed sable brush, and use for them in painting, Antwerp Blue, White, a little Deep Cadmium, a little Madder Lake, and Ivory Black. This represents the local tone; for the deeper shadows some Burnt Sienna is added to the darker colours. The high lights are delicately "touched in" with a small brush, and the colours are those given for the local tone, with the addition of more white and yellow. You must use your own judgment here, for as the leaves show more yellow or blue in their local tones so the Yellow Ochre or Antwerp Blue must be allowed to predominate.

Asters.—The same colours may be used as given for painting the flowers in oil colours (p. 172) with the following exceptions:—use Sepia instead of Bone Brown; substitute Lamp Black for Ivory Black; Rose Madder for Madder Lake; and Cobalt for Permanent Blue.

XI. IRIS (BY THE VERY WET METHOD).

There are agreeable qualities in a water-colour study done while all the paper is wet which are not easy to obtain, or perhaps quite possible, when the paper dries out between the paintings. There is both a softness and a force in this method of painting that makes it particularly suitable for broad effects.

Let us take a few stalks of Purple Iris—a large decorative flower—and treat them after this method. We shall need rough paper—perhaps even as rough as "double elephant." With a hard pencil, draw with accuracy the general outlines of each flower and leaf. Have at hand your drawing-board with your drawing-paper, and two sheets of white blotting-paper—all of the same size—and two strong rubber bands.

The blotting-paper, dripping wet, you make smooth upon the board; then you place the water-colour paper, well soaked, upon the two sheets of blotting-paper. With an absorbent rag wipe the dripping water from the upper surface of the drawing-paper and smooth out all wrinkles and bubbles. Keep the whole in place by the two strong rubber bands. Lay the board, with the paper on it, flat upon a table, or upon a low stool, so that the washes of colour will not run down. Keep far enough away from your work to be enabled to get the general effect rather than note the minutiæ of what you are doing.

We will suppose that you have chosen a bright gray background, and that toward the lower edge your model throws clear gray shadows upon it. With a large brush, well filled with the tint, you wash it in—a little stronger than you see it, to allow for the inevitable lightening and weakening of hue that comes with the drying of water-colours. Use Rose Madder, Cobalt Blue, Aureolin, and Indian Yellow; for the second stage you will need Rose Madder, Cobalt Blue, and Crimson Lake. In the last add in the deepest tones Ultramarine and Crimson Lake. In the high light there may be spaces where it is best to leave the white of the paper. With an absorbent rag wipe out and model, as you go, the highly lighted portions.

The paper does not become entirely dry for hours, because of the wet blotting-paper underneath; so you need not hurry in the execution of your work, which, although broad, should not be careless. The whole will not dry quickly; but the surface, a few minutes after the application of a wash, will be dry enough to allow you to add shading or another wash without disturbing the first one.

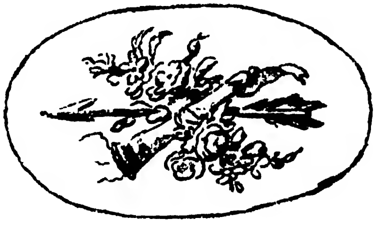
With Yellow Ochre, shaded with Burnt Sienna or Vandyck Brown, represent the brown husks that still cling to the flower stem. The buds and the blossoms will require the same colours and treatment, although they should differ in form and may in tint.

The leaves you see are a bluish green. Where they have not been rubbed together or handled they have a silvery sheen. Represent them by, first, a wash of perhaps Prussian Blue and Hooker's Green mixed, leaving the very high lights white, and shade the leaves with Sap Green or a gray-green where they show either colour in the model.

We do not ever mean, by our suggestions about the pigments for you to use, to advise you to put on any colour or tint which you do not see in the objects themselves. They alone should be your guide. But remember that water colours dry paler than they appear when applied, and also remember that you must look for all the colour and all the varieties of colour that you can see, and, seeing them, not be afraid to record them.

The ends of the oldest leaves of the iris are often brown or faded yellow where early frosts have nipped them. These are harmonious with the other colours; so put them in, if they are in your model.

After everything is finished, place your painting where the sun will shine upon the back of the board, or a breeze can reach it. When the colour is dry, remove the rubber bands, slip out the blotting-paper, replace the water-colour study on the board with the bands to hold it smooth as before, and allow it to dry through and through while thus held flat.



LANDSCAPE PAINTING IN WATER COLOURS.

I. MATERIALS AND APPLIANCES.

For simple sketching from nature, the artist can get on with such a light "kit" that he can carry it in the pocket without conspicuous bulginess. There is a japanned water-colour box only two inches long, an inch wide, and half an inch thick, which, ordinarily, contains :—

Yellow Ochre.
Gamboge.
Light Red.
Crimson Lake.
Prussian Blue or Antwerp Blue.
Vandyck Brown.

With the ring slipped over the thumb, the box may be held like a palette, and the colours may be mixed on the lid. A medicine bottle, with a screw top, in which a slice from a rubber cork is inserted to make it water-tight, will serve to hold the water. With a couple of good sable brushes, a solid sketch block, a pencil, a piece of indiarubber (or piece of bread-crumb), and a portable sketch-stool (which closes into a thick stick), the sketcher's outfit is complete.

If you are a beginner, however, you will need a larger colour-box, and you can hardly do without two small tin cups for water—one to wash your brushes in, and the other for clean water for the brush before taking up colour.

The following is a good palette for landscape and marine painting :—

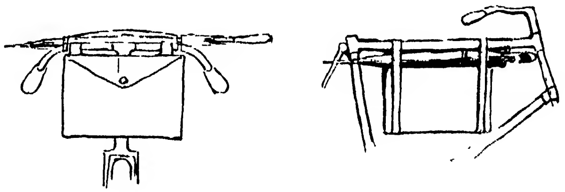
Chinese White. ✓
Yellow Ochre. ✓
Gamboge. ✓
Cadmiums. ✓
Vermilion. ✓
Rose Madder. ✓
Crimson Lake. ✓
Light Red. ✓
Indian Red. ✓
Indigo. ✓
Antwerp or Prussian Blue.
Cobalt Blue.
Emerald Green.
Vandyck Brown.
Sepia.
Raw Umber.
Raw Sienna.
Burnt Sienna.
Blue Black.
Lamp Black.

To this may be added, if necessary :—

Ultramarine.
Ultramarine Ash.
Light Zinober Green.
Dark Zinober Green.
Vert Eméraude.
Burnt Umber.

The properties of each of these colours have been fully described (see pages 63-65).

The Paper.—For sketching and ordinary purposes, a "block" of Whatman or "O.W." paper is most suitable—the kind called "Imperial," which has a moderately rough surface, being most generally useful. For large studies and pictures, sheets of heavy paper of the required size may be got ready mounted on a stretcher, after the manner of mounting canvas for oil painting. If you choose to stretch the paper yourself, proceed as follows :—The paper, having been previously washed over with clear water, is covered around the edges with mucilage or flour paste to the depth of half an inch or more, and is then firmly and smoothly pressed down upon the board. After the paste is quite dry, another wash of clear water slightly tinted with Yellow Ochre is run over the surface, a large flat sable being used for the purpose ; this will remove any accidental impurities from the paper, which is then prepared to receive the colour.



Figs. 91, 92—Convenient Methods of Carrying Sketching Outfit on a Bicycle Excursion.

The loose bag, suspended by two loops to the handle-bar or frame, holds the japanned water-colour box and sketching block. The white umbrella may be carried in one of the methods indicated.

Tinted papers are handy for sketching, if you wish to obtain a broad effect with a minimum expenditure of time. With a paper of a cool gray or warm buff tone, large spaces of half-tint are ready secured. But these are only available if you use body (opaque) colour, and, as has been observed already (p. 60), this is opposed to the most approved practice of water-colour painting to-day. It may be remarked, however, that such masters of the art as Turner, Müller, and Stanfield frequently worked in opaque colours on tinted paper, and found it no sin.

II. DRAWING FOR LANDSCAPE PAINTING.

Though it is perhaps more difficult to excel in landscape than in figure painting, it is easier to produce satisfactory and even valuable work. A long course of study of drawing is necessary to enable one to produce a passable figure; but if you have a feeling for natural beauty, with a little practice you may do meritorious work in landscape.

The drawing which a landscape painter executes with pencil, or charcoal, or crayon before commencing to paint is usually nothing more than a simple "blocking out" or "placing" of the principal forms which he intends to get into his picture. Let us suppose that your subject includes a large tree, with a rock on one side and a house on the other. You say to yourself: "I will place my tree here, near the centre of the picture; it is to be so high, consequently so broad. The rock is at such a distance to the right, the house so far to the left. Neither is as high as the tree; the rock not so high as the house." And so you go on making general observations like these, as to the size and position of important objects, and indicating your conclusions slightly and without going into detail. You should continue to work just as simply, at first, when you take up the brush. Go on working in large masses, and ask yourself (to keep to our illustration) just how much darker is the green of the tree than the gray of the rock, how much darker the shadows than the lights, what relation exists between the sky and the objects that appear against it, and between these same objects, again, and the foreground. Little by little you will acquire the ability to introduce minor forms, while becoming more correct in the drawing of the larger masses.

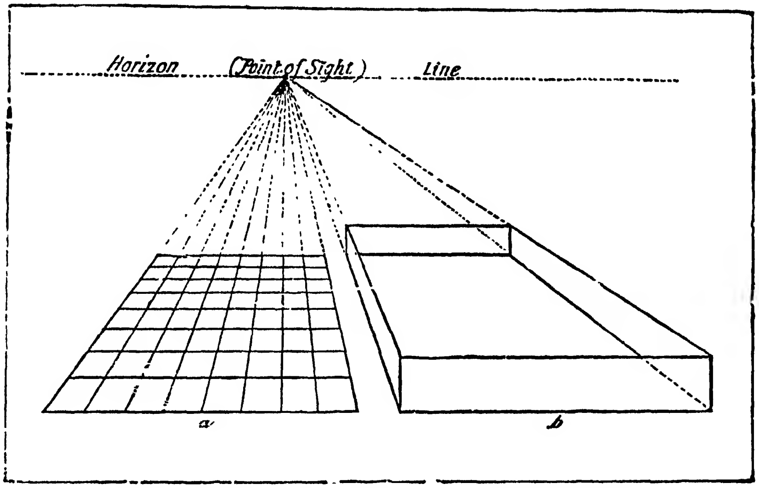


Fig. 93. Landscape. Rectangles in Perspective.

III. PERSPECTIVE.

As we have before remarked, perspective is the art of seeing things as they seem to be, and not as they are. In landscape, this way of observing is particularly necessary. There are two kinds of Perspective:[1] (1) Linear Perspective, relating to the seeming change in the forms of objects as seen in line, and their gradual diminution in size in proportion to their distance from the eye; and (2) Aerial Perspective, relating to those changes which take place in the appearance of objects, either as to their receding or advancing, through the interposition of the atmosphere.

The perspective needed for every-day purposes in sketching from nature is quite a simple matter; but, even so, one which must be well understood. Ordinarily there is no use for more than the Vanishing Point (or points) and a system of Comparative Measurements, the Picture Plane having been established.

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[1] See note, p. 4.

The Picture Plane is that portion of landscape which is selected for the subject of a sketch, and may be contained within the limits of the paper upon which the painting is to be made. It is always supposed to be at right angles to the direction in which you are looking. If you are looking straight in front of you, the picture plane will be vertical. The limits of your picture should include no more than may be clearly seen at a single glance, without turning the head; but it may include less; and the part chosen may be taken either toward the middle, or toward either edge of the space over which the vision extends.

The Horizon Line is an imaginary straight line dividing the earth and the sky, drawn horizontally across the paper or canvas through a point supposed to be exactly opposite the eye as you sketch your subject. Even if entirely concealed from view by hills, trees, and other obstructions, this line always exists for the painter, and must be distinctly felt—that is to say, indicated or in some way suggested to the observer through aerial or linear perspective. It will be higher or lower according to your elevation. If you place your easel near the sea-level, your horizon line will be low; if by the hill-side, it will be correspondingly higher.

The point on the horizon line supposed to be exactly opposite your eye as you sketch your subject is the **Centre of Vision**, sometimes called the **Point of Sight**. It is a most important feature in the drawing of a landscape, as it forms the centre from which all lines of the perpendicular perspective converge, and by the position of the same, either near or far from the foreground, is determined the comparative remoteness or proximity of distant objects in the composition.

The Vanishing Point is an imaginary point located upon the horizon line. All perpendicular lines drawn downward from the top or up from the bottom of the canvas will *meet here* and terminate or "vanish" at this point. By the correct placing of the "vanishing point," and lines drawn through it, any degree of distance may be represented; and we are thus enabled to determine with accuracy the relative size and proportions of trees or other objects which may be situated in the background, middle distance, or foreground. A familiar but forcible illustration of this principle, and one easily accessible, is to be seen in standing upon an ordinary tram-car track and glancing along the rails. If the street is a straight, long one, you will observe the two rails gradually approach each other as they recede from your eye, until in the distance they appear to touch each other and become one, finally disappearing completely from sight at the horizon line, if nothing interferes to obstruct your vision. The vanishing point thus becomes the centre from which all perpendicular parallel lines in the picture plane originate, and so we conclude that all lines drawn from this point to the front of the paper or canvas will give the mean direction of any receding planes we desire to represent in the picture, or, it may be, their *boundaries*, such as the banks of a river, the sides of a road, the lines of a fence. The perspective lines should always be ruled in (as they *must* be perfectly straight), but they can be removed as soon as the drawing is correctly made.

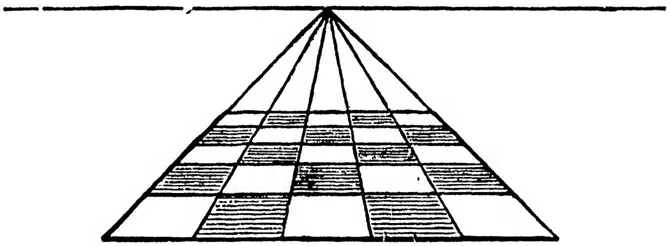


FIG. 94.—LANDSCAPE. RECTANGLES IN PERSPECTIVE.

IV. COMPARATIVE MEASUREMENT.

A great many difficult problems in perspective may be solved for the artist by the simple expedient of comparative measurement.

This is the system of measuring spaces or distances, by which we may arrive at an approximately correct impression of relative proportions without the aid of the vanishing point.

The method is a very useful one in sketching from nature, and may easily be followed by the observation of a few simple directions:—

In drawing the landscape, some object in the middle distance (let us say an ordinary tree) is adopted as a standard of measurement. This is compared with the trees in the extreme distance, and by actual calculation it is noted just how many times smaller these distant trees appear to •be, and they are placed accordingly in this relation. The same practice reversed will give us the comparative height of a tree in the foreground, which will necessarily appear much larger than that in the middle distance. The principal points of what is called the linear perspective, in relation to the picture plane, may thus be determined.

In painting a landscape, the conventional manner of expressing the facts of aerial perspective is by rich, brilliant colour in the foreground, seen in contradistinction to gray and misty effects in the distance; but of course there will be found many exceptions to this, and the influence of surrounding circumstances may cause such conditions to appear actually reversed at times. It is safe, however, to presume that, no matter how brilliant the actual colouring of distant objects which mark the horizon line, nor how dull and dark the foreground tones may chance to be, there will always be found to a certain extent this grayish envelope around such objects, softening all outlines and veiling their brilliancy, so that the aerial perspective may be preserved.

The Middle Distance may be defined as that part of the landscape which is situated between the background and the foreground. This should be carefully studied in its relations to both the adjacent planes, as, owing to its central position, it serves as a balance between these extremes. Objects seen in the middle distance will appear smaller in size and less brilliant in colouring than those of the foreground, while at the same time they will seem by comparison to be more clearly defined and less indistinct in colour than those in the background or extreme distance.

The Foreground, technically speaking, is represented by the space directly in front and at the lower part of the paper or canvas, extending to its extreme edge. Everything seen in this plane appears larger in size, more distinct in form, and more pronounced in colour than will be observed in the other parts. Here details of foliage may be carefully drawn; knotty branches, roughnesses of tree trunks or the reverse observed; the petals of flowers, the different varieties of weeds, even the blades of grass indicated, while the very pebbles in the road take form and shape, thus giving strength and individuality to the whole composition.

V. COMPOSITION.

Having established the horizon line, we proceed to decide what proportion the background, middle distance, and foreground shall occupy in relation to the sky. These relative proportions are naturally based upon the amount of interesting matter to be contained in each. If, for example, the landscape is not particularly picturesque—such as, let us say, a field of stubble or an ordinary country road—we may easily make the sky the most important part of the composition. Such division is a favourite one with some master landscape painters, who so manage that the principal effect of the scene depicted is centred above the sky line: perhaps in the dramatic action of gathering storm clouds, or, it may be, the peaceful splendour of an autumn noon, with clear, vibrating depths of transparent blue. To paint such an expanse of sky is not an easy matter, however, and a safer course for the beginner to follow is the more commonplace division of the spaces.

There is here another thing to beware of, and this is an equal division of sky and earth. Such an apportionment is commonplace in the extreme, and tends to rob the picture of interest: in fact, any exact repetition of space is to be avoided on a large scale. Where there is water in the background, a lake or river, it does not look well to see the three elements—sky, water, and earth—occupying precisely the same proportions. It is not that such an arrangement is not according to nature, but in art the *point of view* determines the composition, and this is always at the option of the artist.

Too many students who seek subjects for sketches forget this, and will seat themselves carelessly anywhere to paint some charming bit of landscape, not remembering that it rests with themselves to make or mar the composition. While your model, Nature, is immovable, a few inches difference in the placing of your easel to the right or to the left, a slight shifting of position forward or backward, will alter the whole effect. It is surprising what a small change here will accomplish: there is, indeed, but a step between the commonplace and a distinguished view of the identical bit of landscape. The works of great painters show us this, and therefore it is that one should lose no opportunity of studying their works through photographs, engravings, or other reproductions if the originals are inaccessible. In the painting of trees some of these masters particularly excelled. Constable, Rousseau, and Diaz knew and loved their forests, and learned so to represent them that in looking at their canvases to-day you feel in imagination transported to cool, umbrageous depths where interlaced branches overhead shut out the glare of the sun, and soft, green mosses lie underfoot. There is generally a rough footpath, or perhaps a picturesque old roadway, with heavy ruts where the woodsman's cart has lumbered along; but one rarely meets the woodsman himself in these pictures; the noble trees and drifting clouds above have claimed the artist's best efforts, and the result is complete.

No matter how slight or unfinished the sketch from nature, be sure to have in view always some definite idea of composition in its arrangement, and before beginning to paint look about you and consider the availability both in regard to colour and composition of what passes before your eyes. By availability we mean the fitness for a composition. In selecting a subject, search for those themes which will afford you practice in some especially weak point. One man may develop a natural aptitude for the painting of skies, while another may find his taste inclining to the mastery of interlacing branches and delineating of foliage. Do not be discouraged if at the first painting the trees refuse to assume form or shape. This will come later, and after they have been broadly laid in, with their values in connection with the sky well considered, the details may be developed at leisure.

Some Things to Avoid.—Avoid any lines in a composition which will divide the canvas into equal spaces, either horizontally, perpendicularly or diagonally.

Avoid unmeaning or uninteresting repetition of lines or curves.

Avoid a too abrupt or violent perspective, and avoid placing the horizon line exactly in the middle of the canvas.

Avoid disposing any two objects of nearly equal size at exactly the same distance from opposite sides of the canvas.

Avoid any arrangement which will divide the canvas or prominent objects therein into exactly equal masses of light and shade.

Avoid monotony of form or colour, but endeavour to seek for that variety which will be both symmetrical and harmonious.

VI. PRACTICE IN WASHES.—SKIES.

After the preliminary pencil sketch of your subject, fill your largest brush with water with a little Rose Madder, Cadmium, or Yellow Ochre, and wash it over the whole of the paper, excepting where there are to be very light clouds or snow. This will take off the rawness of the white paper.

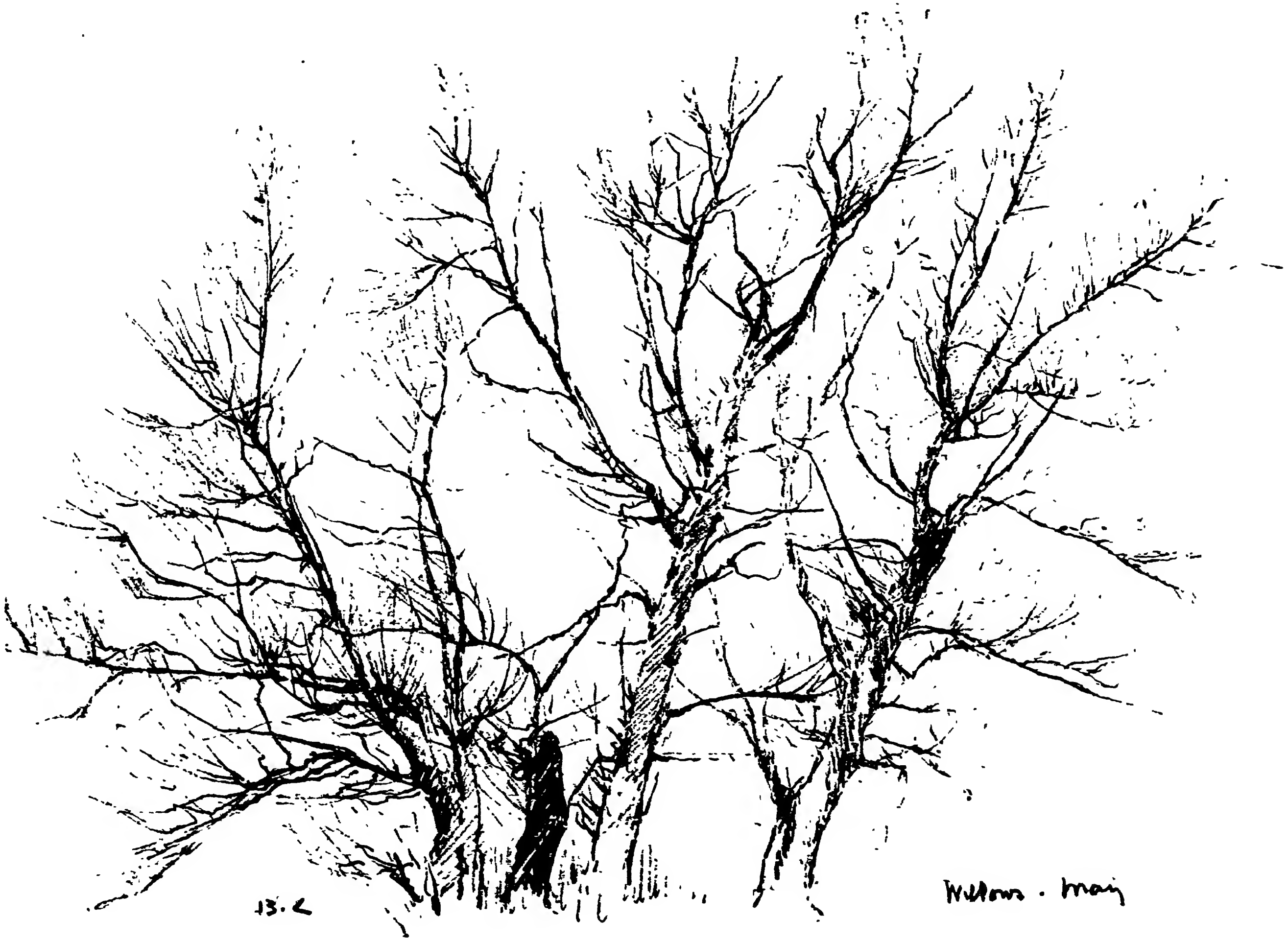


FIG. 95.—LEAD-PENCIL STUDY OF WILLOWS IN EARLY SPRING.

When the trees are leafless, or nearly so, is an excellent time to study the trunk, the bark, and the growth of the branches. Later in the season, when the foliage is fully out, the student should paint the same group of trees from the same point of view.

Your first practice should be directed to manipulating flat washes. Make separate studies of flat blue sky tones with broad transparent washes, over the clear paper. You will find this much more difficult than you might suppose, as the colour will, even with the most careful handling, have a tendency to form spots or run into streaks, which nothing can remove. Use plenty of water with the colours. The exact tone of the blue wash you will get by experimenting on a separate sheet of paper. Have a piece of thick white blotting-paper always at hand, ready to take up any superfluous drops of colour, or to remedy mistakes.

A large, round camel-hair brush is most serviceable for such washes, and with this the flow of colour is steadily guided in long, sweeping strokes, across and downward, toward the horizon line: it is, in fact, better to let the local tone of the sky run lightly over this line, where it forms a useful gray tint later, melting into and softening the foliage greens in the extreme distance.

Very necessary it is, and very difficult too, to keep the sky tone clear and fresh, exerting as it does a more or less dominating influence upon the whole landscape; for if the sky be dull and flat in colour, thus losing its charm of transparency, no amount of brilliancy in the foreground washes will make your picture interesting.

There is nothing in nature more difficult to represent successfully than a cloud, and yet nothing seems more easy to the untutored amateur, who "dashes in" the soft, cottony, shapeless mass that he calls a cloud, with supreme satisfaction. He will learn better by-and-by. Each cloud has not merely its own form and colour, but it is full of character and significance to the true artist. For instance, the same features of landscape seen in combination with different aspects of sky may be made to suggest a scene of peace or one of turmoil, to radiate gladness or depress with melancholy. Heavy, threatening clouds may appear ominous of a coming storm; or, ragged and torn, scattered irregularly over the sky, with glimpses of clear blue shining through may hint of tempest past.

Colour Combinations.—With the following palette you may obtain any desired sky effect: Cobalt, Antwerp Blue, Ultramarine, Indigo, Rose Madder, Vermilion, Crimson Lake, Light Red, Brown Madder, Indian Red, Yellow Ochre, Cadmium Yellow, Sepia, the Umbers and Siennas, Vandyck Brown, Lamp Black.

For Clear Skies.—Cobalt; deeper towards the zenith, and gradually lighter as it approaches the horizon. Also, Ultramarine; or Ultramarine and Antwerp Blue; or Cobalt Blue, Cadmium, *Vert Emèraude*, Rose Madder.

Cloudless Morning Sky.—The above, with Lemon Yellow at the horizon. Connect the blue and yellow by Burnt Sienna, to prevent the blue and yellow making green.

Gray Sky.—Rose Madder, Antwerp Blue, Cadmium.

Light Clouds.—Ultramarine and Light Red. Or Cobalt, Cadmium, Rose Madder.

Rain Clouds.—Indigo, Umbers, Rose Madder.

Dark Clouds.—Indigo or Antwerp Blue, Lamp Black, Carmine or Crimson Lake and Light Red; Cobalt and Brown Madder or Indigo, Rose Madder, Gamboge.

Warm Afternoon Sky.—Yellow Ochre, Light Red, Indigo.

Evening Sky Effects.—Gamboge, Vermilion, Carmine; or Crimson Lake; or Vermilion, Yellow Ochre, Cobalt.

Gold and Red Clouds.—Siennas, Rose Madder, Cadmium; or Vermilion and Indian Yellow.

Sunset.—Cadmium, lightest at the horizon, and uniting with Crimson Lake, to produce orange. Glaze the Cobalt above lightly with Burnt Sienna, and in parts only, to avoid garishness.

Make studies of skies—the effects of morning light, afternoon and evening light upon skies. Use plenty of water, and wash over broadly, with the drawing-board raised at an angle of forty-five degrees, so that the colour will flow thinly. The secret of success is in using the colour very liquid and thin. The forms of clouds should be drawn delicately; in

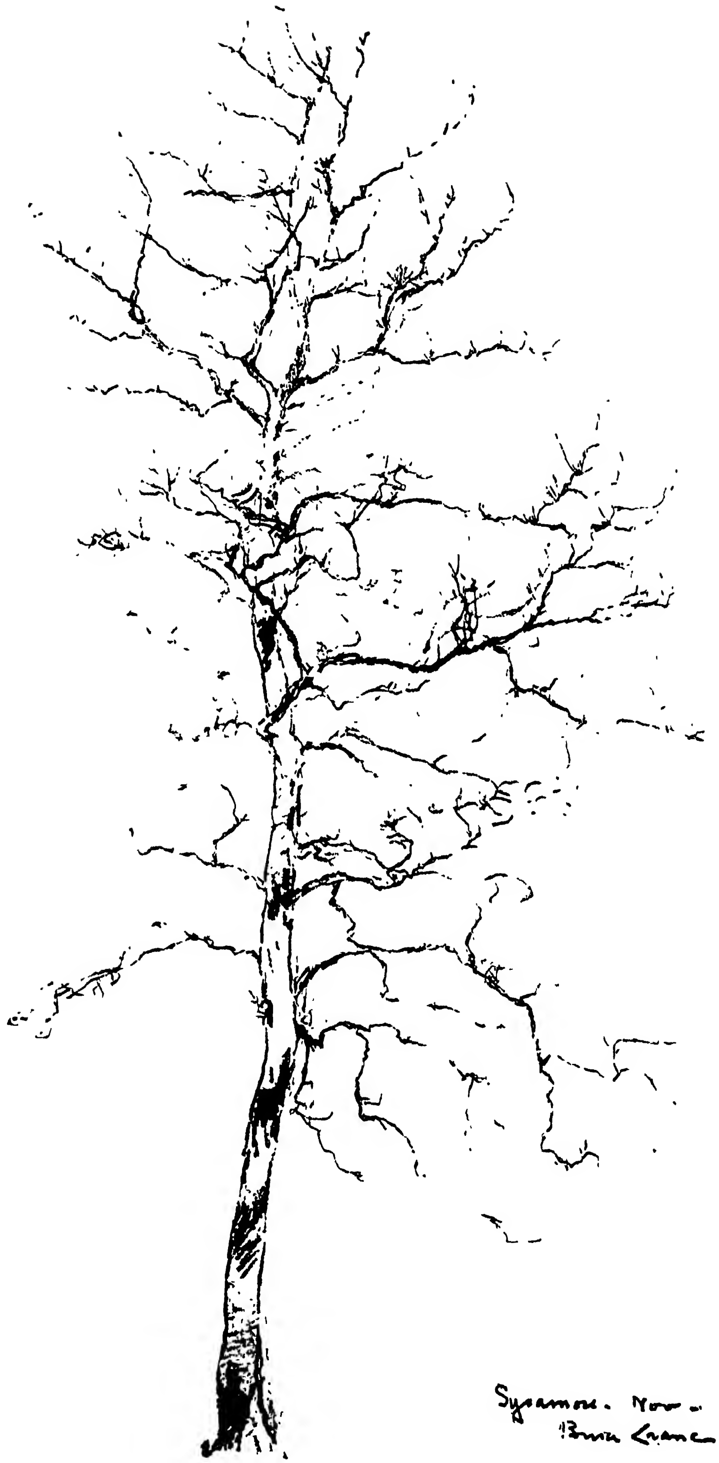


FIG. 96.—LEAD-PENCIL STUDY OF A SYCAMORE IN EARLY WINTER.

The distance between each branch and the next was measured exactly. Nothing was left to chance. Care was taken that each angle of the crooked branches had just that opening that it had in nature, and each of the little nests of twigs is exactly where it occurred on the tree.

no case should the pencil-marks show through the colour. If the tint upon the clouds is darker at the lower part, begin with a good deal of water, and but little colour, at the top, adding more colour as you proceed, and hastily bring your drawing to the horizontal, lest the colour run too far.

VII. WATER.

The colour of water, from the artist's point of view, is subject to, and visibly affected by, many surrounding influences, apart from its local coloration.

The first to be mentioned are the shadows which are cast upon the water; the second are the reflections which may be mirrored on its surface.

These are in themselves two distinct and separate appearances, and are not to be mistaken for, or confounded with, each other. Any object which intercepts a ray of sunlight will cast a shadow upon the water—let us say, for instance, a boat floating upon its surface, or a tree upon the bank.

If the sun is rather high and the sky is clear, the shadow of the boat falls distinct in form and dark in colour upon the water beneath and around the boat; as the sun falls lower, the shadows lengthen upon the opposite side from which the sun strikes it. If you are near enough to see, you will observe that within this shadow, as in a mirror of dark glass, every detail of the under side of the boat is *reflected* and distinctly repeated. We say distinctly, but we do not mean correctly, because this reflection may, and probably will, be very much distorted, according to the position of the observer. Reflections of trees, in the water, will appear inverted to the artist who is sketching them from the front. Viewed from the opposite side of the pond or stream, they will appear very much elongated; but when we approach the shore where the trees are standing they become, on the contrary, absurdly shortened.

If you will take your colour-box with you, and make some quick sketches of the shore line from different points upon the water, illustrating these principles, you will gain practical knowledge of such things which will be invaluable. You will also observe and note many interesting details of local colour and form that no general observations can indicate. Each object naturally presents its own individuality to the student, which will vary according to the circumstances under which he views it. The teacher can only suggest *how* to look for certain things in nature; it rests then with the student to discover and verify them for himself.

There is a certain logical perspective in reflections which must not be forgotten, as by this is indicated the distance of the objects from the observer in two directions. The diminishing size to the right and left *along* the horizon line should be observed; the longest and most distinct reflections occurring opposite the eye of the artist, and gradually growing narrower in line and more indistinct in colour in the distance. Such reflections are most picturesque when accompanied by a soft blue sky and white or gray clouds.

As all objects are *inverted* when seen in reflection from the opposite bank of a river, the sky in your *reflected* picture will lie at the lower part or front of your canvas, while the trunks and roots of the trees, mirrored in the water, are all turned upward. If the water is very still, with no wind to disturb the surface, a very curious illusion is produced: a double row of trees appear to line the banks of the stream. This effect, though excellent for study, should be modified in a picture, for the very perfectness of the illusion, the almost mathematical precision of line and mathematical repetition in colour, deprives it of that artistic irregularity which is indispensable in the picturesque. To do this, you will, perhaps, break the continuous lines of the reflection by the swirl of a current, which will scatter them in parts, distorting some, obliterating others, and adding a touch of white foam here or a curved green shadow elsewhere. If you prefer a quieter movement, you will seize a moment when a passing breeze wrinkles the placid water with a thousand tiny wavelets, or a sudden "cat's paw," as the yachtsmen call it, scratches its smooth surface into tiny ripples, fringing out the edges of the reflections, and softly blurring their outlines. Each of these little waves or ripples will catch a glint of light; but remember, no matter how bright these high lights appear, they are always lower in tone than the light in a clear sky.

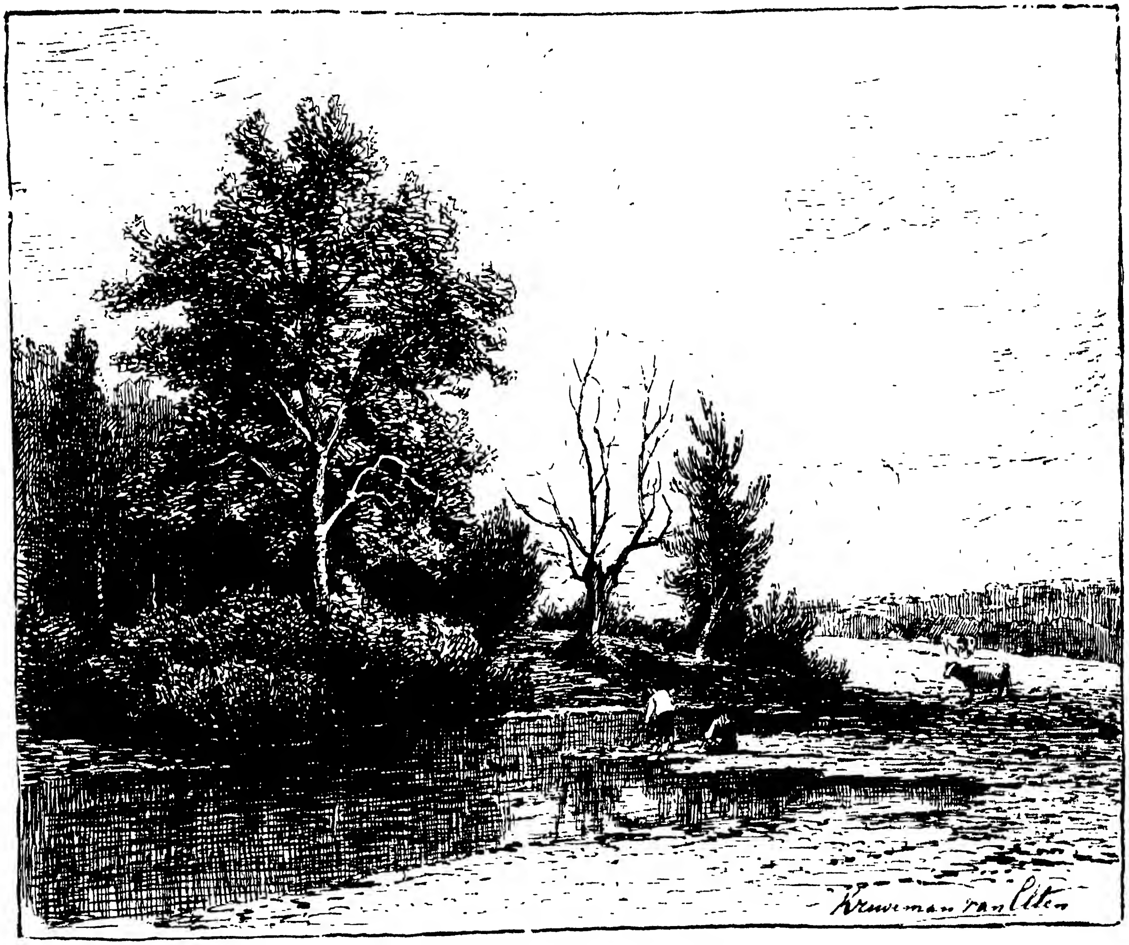


Fig. 97.—Landscape Composition.

The simplest bit of water to paint is one deep enough to take reflections from the banks. In the first place, wash over the whole surface of the water in your drawing with the tints you have used for the sky, and, when half-dry, draw the exact tints used on the banks, or the foliage on the banks, down into the half-wet colour. Do not attempt much detail, except to preserve high lights where they are light, and darks where they are dark. Use the brush flat, instead of on the point; if the colour is likely to run too far, use a bit of blotting-paper to take up the colour on the lower edge.

A brook, with stones or rocks, is charming when well painted, but difficult for the beginner. As the general tint of rocks and stones is gray, either warm or cold, you cannot do better than place upon your palette Cobalt, Light Red, Yellow or Yellow Ochre, Indigo, Rose Madder, Raw Umber, Vandyck Brown, and Ultramarine.

Smooth water is best represented by working the brush in a horizontal direction. Reflections in water are usually perpendicular.

A beautiful opportunity for colour may be seen on a fine evening when the sun, going down in a clear sky, traces a path of gold through a plane of dusky purple, burnishing the top lines of the ripples till they almost seem like a network of silver spread over the darkening mass beneath.

Moonlight upon the Water furnishes a charming study in its seeming simplicity, though necessarily more or less monotonous compared with the brilliant sunlight colouring. The yellow light of the full harvest moon, on a night in late summer, gives a fine mellow glow of colour to the water it illumines, and is a subject full of rich and interesting suggestion for the young painter.

In Painting the Lights on water, whether they be reflections or from direct rays, the colour should partake somewhat of the quality used in painting the local tone of the water. If the water is blue, the crest of the wavelets may be a rather blue-white; or, if green, a greenish tint is suggested.

At dawn or at sunset sometimes, the brilliantly coloured light of the sky reappears in elongated reflections, caught in a chain along the line of each broken wave, making them sparkle like jewels. In such cases, a general glow of colour is also reflected upon the whole surface of the water, generally richer and darker than the sky, but most gorgeous in effect. You will observe distinctly here that the reflection is *inverted*; all the dark, rich colours at the horizon on land being repeated at the other side of the horizon line in the water, while the lighter tones in the upper sky spread out into the foreground, reaching to the shore.

Colour Combinations.—It is, of course, impossible to foresee the various effects of colour which different bodies of water may present to the landscape painter—at least, in such a manner as to warrant one in laying down arbitrary rules for the guidance of the pupil; nevertheless, a few practical suggestions may be found helpful in regard to combinations of colour to be employed in painting certain familiar effects.

Under Ordinary Conditions.—It will be observed in any body of water seen under ordinary conditions that the coloration in the foreground is most vivid and brilliant, becoming grayer in tone as it recedes from the eye in distance. Permanent Blue in any combination will always give the best effect, therefore, in the latter case; while the bright clear Antwerp Blue will furnish the necessary colour for the former.

Dark Steely Blue Water.—When large bodies of water appear dark steely blue, Permanent Blue, Yellow Ochre, Madder Lake, and Lamp Black may be used for the local tone, with the addition of Raw Umber and Burnt Sienna in the reflections.

Greenish Water.—When water is of a greenish colour, vivid and transparent, use Cadmium instead of Yellow Ochre and Antwerp Blue in place of the Permanent Blue. Raw Umber and Burnt Sienna are always useful in the painting of water, no matter what the local colour may be.

When there are bright, sparkling lights upon the water, the colour should be kept fresh and crisp, and these high lights touched in sharply with a clean brush without blending.

For such lights use White, Vermilion, a little Light Cadmium, or Yellow Ochre (according to the local tone desired), qualified by Lamp Black, used sparingly.

The Reflected Sky, remember, always influences the colour of the water, which must necessarily repeat the same colours as the sky to a certain degree; the reflected colour, however, will generally be darker and grayer upon the water than the actual colour as seen in the sky. In painting any body of water, therefore, in a landscape, the same list of colours may be used, with modifications, that have served to represent the sky. In such cases less White and more Raw Umber are employed in the local tone.

Dull Gray Water.—For a dull gray water under a stormy sky, you will need White, Yellow Ochre, Raw Umber, Permanent Blue, and Light Red, with the addition of Lamp Black and Madder Lake in parts.

VIII. FOREGROUNDS, TREES AND HERBAGE, DISTANCES.

Mass the features of your foreground. Avoid tiring the eye by overmuch detail, but such as appears must be very carefully drawn. Some detail is allowable—for instance, on the grasses or shrubbery or stones. Paint the latter in grays and browns, touch them up sharply in the shadows and thus give point and strength to the work.

Objects in the foreground show the strongest shadows as well as the brightest lights; but avoid excessive light and shade, otherwise the eye may be hindered in looking farther into the landscape. All colour should be more or less broken. The general colouring of a landscape should be darkest toward the middle distance—not in the immediate foreground. Warm colours are best reserved for the foreground; broken reds are useful for the middle distance.

Trees.—There is no such thing as a green tree in nature. Except where the upper part of the foliage reflects the blue or gray of the sky, the tone is more gray than green. On the undersides the warm tints of the earth are reflected.

The stumps or trunks of trees and the branches are painted with warm colour, which contrasts well with the cool tints of the foliage. Do not try to see the trunk simply brown: it is rarely so in nature.

To attempt to paint trees in their exact shape is almost hopeless, for the wind keeps branches and leaves in constant motion. The only thing we can do, then, is to give their character, or the general impression conveyed to the eye. Wash over the whole surface with the colour of the highest light; then, when nearly dry, the middle tones, and finally the darkest. Wait until this is quite dry before attempting the trunk or branches. Never paint the branches directly from the trunk through the tree: nothing could be stiffer. Note particularly how often the branches disappear behind the leaves.

If your foliage looks opaque and heavy—as it will be very apt to look until you acquire more skill than is usual with the student—much can be done to improve it by washing

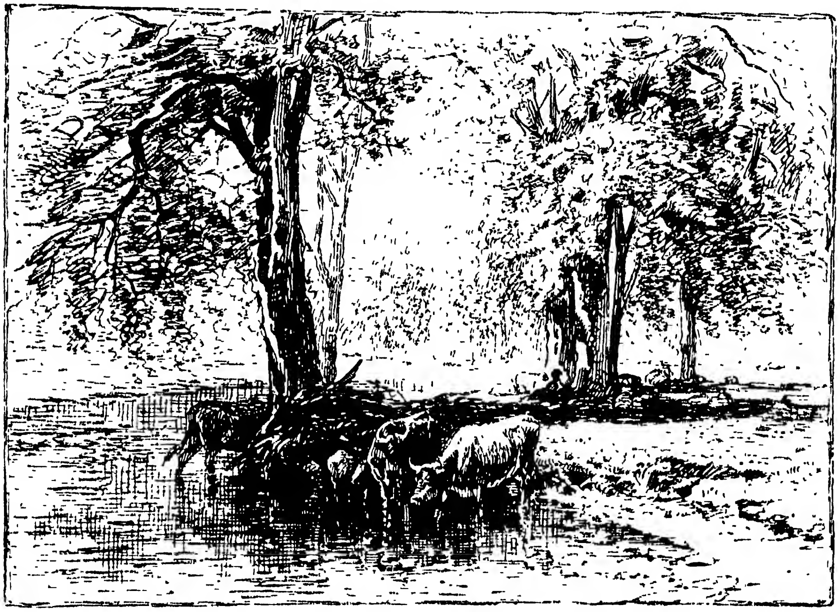


FIG. 98.—LANDSCAPE AND CATTLE COMPOSITION.

over the place with a brush full of clean water. Sop this up with blotting-paper, and if you need high lights, you can wipe them out with a corner of your pocket-handkerchief. Keep the colours as transparent as possible; be as careful to avoid muddiness in the foliage as in the sky.

Flowers in the Landscape.—In composing a subject which will include masses of flowers or flowering shrubs, work with a definite intention in regard to the arrangement and balance in relation to the trees. Decide, therefore, at once *where* the interest of your composition is to centre—whether the wild flowers are to occupy the principal position, with the trees accessory, or *vice versa*; and let this impression be conveyed with sufficient clearness to concentrate the attention of the beholder, and to indicate your own point of view.

There is a certain amount of perspective in the drawing of grass and weeds, with wild flowers scattered among them, which should be carefully observed; such perspective is seen both in form and colour, and has an important influence upon the composition. A mistake here is more than unfortunate, for it will render an otherwise carefully painted picture absolutely ludicrous. It is not necessary to place in the front of your picture dandelions the size of a teacup, contrasted with tiny grayish yellow dots in the distance resembling pin-heads, to distinguish the foreground plane from the background; strongly defined contrasts of colour are also unnecessary where such large masses of bloom are handled. A few light, brilliant touches here, a wash of tender gray there, some salient details carefully drawn, which will attract the eye where they should be most evident, well-suggested hints of colour, mingling with the masses of verdure—that is all; but it is just this careful observation of nature which gives charm to the picture.

In painting such subjects, transparent washes are used with particularly happy effect; the pure colour, whether the blossom be yellow, pink, crimson, blue, or purple, just toned with Black and Yellow Ochre, often serving to represent a brilliant cluster of flowers relieved by fresh green leaves. Study the stems and leaf forms in connection with the blossom to which they belong; and even though perhaps few details will be actually visible in the general effect, yet the impression of these characteristics, intelligently suggested by wise touches of your brush, will give fitness and harmony throughout the whole.

Colour Combinations.—The following will be found useful palettes and combinations:—

Foreground and Foliage.—Siennas, Vandyck Brown, Vermilion, Gamboge, Cadmium Yellow, Indian Yellow, Raw Umber, Antwerp Blue.

Walls, Rocks, and Buildings.—A gray made of Indigo or Antwerp Blue and Lamp Black, warmed with Sepia and Carmine or Burnt Sienna.

Foregrounds, Stones, Walls, etc.—Yellow Ochre added to the gray, as above.

Middle Distances.—Raw Umber, Cadmium Yellow, Rose Madder, Permanent Blue.

Distances. — Permanent Blue, Cadmium Yellow, Rose Madder, *Vert Eméraude.*

Aerial effects are aided greatly by using retiring colours like blue and gray for sky and distance, and carrying the colour of sky and clouds over the horizon and distance.

Distant Hills, or Mountains with Verdure.—Ultramarine and Light Red, Indigo or Antwerp Blue, Gamboge, and Yellow Ochre.

Hills or Rocks without Verdure.—Yellow Ochre and Light Red.

Trees in Shadow.—Indigo or Antwerp Blue, Lamp Black, Vandyck Brown and Burnt Sienna, or Indigo and Sepia.

Trees close at hand.—Indian Yellow, Antwerp Blue, Burnt Sienna; or Gamboge, Brown Madder, Cobalt; or Yellow Ochre, Lake, Indigo.

Trees in Sunlight.—Gamboge and Ultramarine; or Indian Yellow and Ultramarine; or Gamboge, Burnt Sienna, Indigo; or Antwerp Blue; or Sepia and Gamboge.

Sombre-hued Foliage.—Indigo and Gamboge; Gamboge, Ultramarine, Burnt Sienna; Antwerp Blue, Bistre, Aureolin; Yellow Ochre and Light Red.

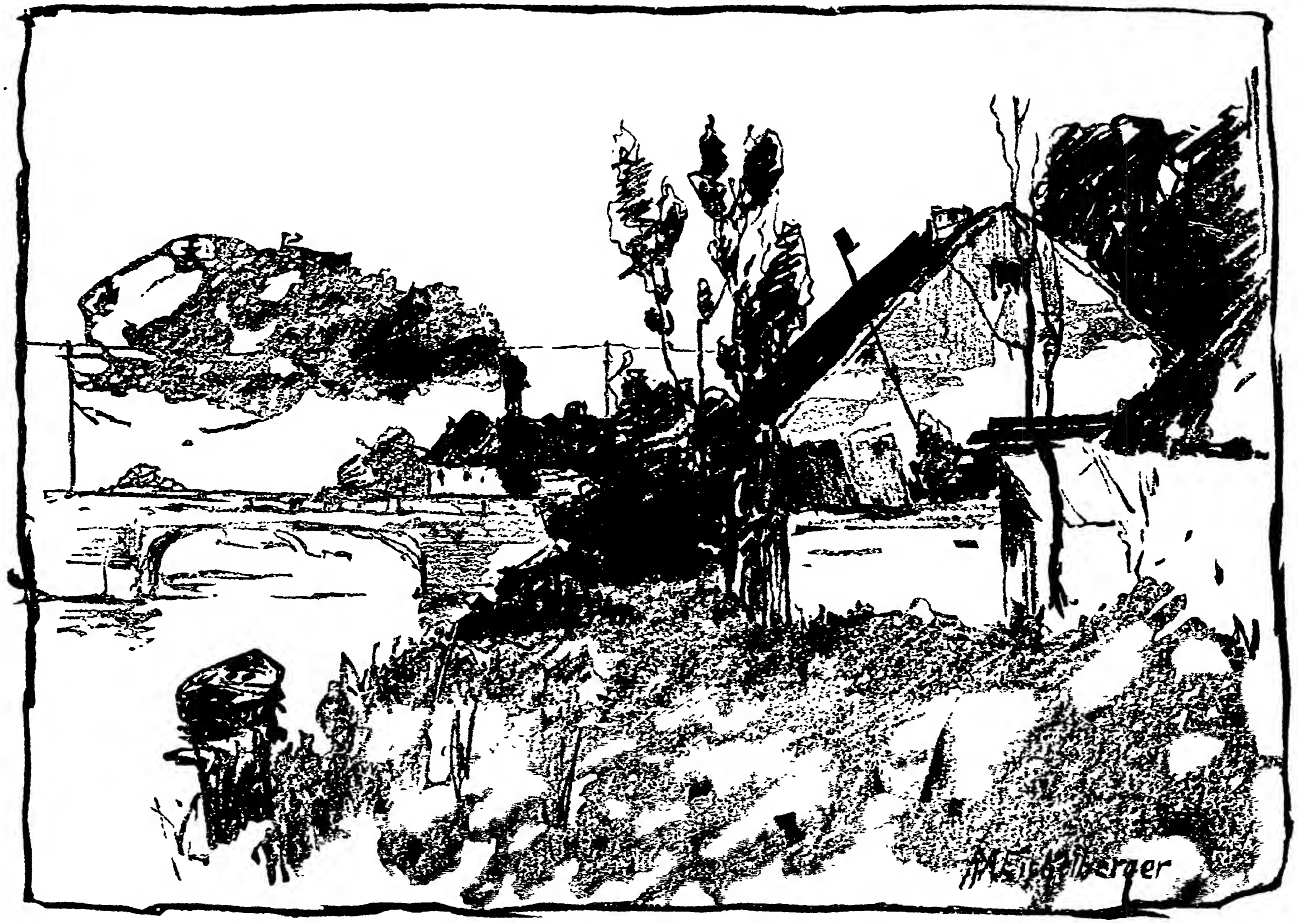


Fig. 99.—Lead-pencil Sketch from Nature.

Autumnal Foliage.—Burnt Sienna ; Gamboge and Brown Madder ; Raw Sienna and Indian Yellow.

Early Summer Grass.—Ultramarine and Gamboge ; Ultramarine, Gamboge, and Yellow Ochre ; Ultramarine and Yellow Ochre ; Indigo and Gamboge ; Ultramarine and Indian Yellow.

Rich Grass.—Burnt Umber and Ultramarine ; Brown Madder and Burnt Sienna ; Gamboge, Burnt Sienna, Indigo.

Faded Grass.—Gamboge and Sepia ; Gamboge and Emerald Green ; Gamboge, Emerald Green, Cobalt ; Raw Sienna and Sepia.

Herbage. — Gamboge and Ultramarine ; Yellow Ochre and Ultramarine ; Emerald Green and Ultramarine ; Emerald Green and Gamboge ; Ultramarine, Yellow Ochre, Rose Madder ; Indian Yellow and Ultramarine ; Gamboge, Ultramarine, Burnt Sienna.

IX. MOONLIGHT.

The conventional idea of moonlight, as represented by the ambitious amateur, is generally a monochrome effect of black and white, which, combined in various proportions, results in a gamut of grays, the scale being sometimes diversified by the introduction of a certain element of Indigo. Both the gray and blue schemes indicate an effort toward the representation of moonlight as it is supposed to appear, and yet both are wrong. Moonlight is not synonymous with monochrome, for the landscape seen by moonlight is at times full of colour—colour that is far removed from the strong, insistent, chromatic scale of sunlight, but yet is distinctly *colour* ; faint, mysterious suggestions of tints the daylight never shows will clothe familiar forms. Flowers, foliage—everything in nature seems to assume a different personality, as it were, in this light, by which the turbid waters of a mill-pond are turned to silver, and hard, unbeautiful angles of rock are hidden in picturesque shadow.

And thus we come to the heart of the subject : a picture of moonlight should not be merely a transcript of objects seen by the light of the moon ; for, no matter how correctly the forms are drawn and the sharp effects of light and shade rendered, if this be all, any photographer can do as much ! A painter must give us more ; he must, with his art, appeal to the imagination of the beholder through realism, but not by it ; he must appreciate the sentiment of his subject while avoiding a sentimental presentation of it.

In painting moonlights it is well to give the paper a wash of Yellow Ochre, sometimes even warming it with a little Indian Red. This gives airiness to the blues which are laid over it, and which in themselves have a tendency to heaviness and blackness when used on bare paper.

Colour Combinations.—The subtlety of moonlight colouring is such that it is most difficult to indicate it by any prescribed combination of colours. Still the following will be suggestive:—

Moonlight Sky.—Indigo and Rose Madder, modified with Gamboge ; or Indigo, Vandyck Brown, Rose Madder ; or Burnt Umber, Cobalt, Rose Madder.

Moonlight Clouds.—Light Red and Indigo ; or Sepia, Rose Madder, Cobalt.

Buildings in Moonlight.—Sepia, Ultramarine, Crimson Lake.

Foliage in Moonlight.—Raw Umber, Indigo, Crimson Lake ; or Antwerp Blue, Gamboge, Sepia ; or (for specially dark trees) Indigo, Sepia.

X. SNOW AND ICE SCENES.

At times, an expanse of snow considered in detail will show every colour of the rainbow, but in so refined and modified a way that the erroneous impression still remains that to be "*as white as snow*" an object must be absolutely colourless and the acme of whiteness. Let us endeavour to look upon a field of snow, if the ground be level, as an enormous mirror—or rather reflector—spread beneath the overarching skies. When we ask ourselves what colour the snow is, we shall then naturally look at the sky, and, taking the two in consideration together, arrive at an estimate of the local tone of our snow field. If the sky is clear light blue overhead, the snow will be of dazzling blue whiteness, with warm, yellow-gray shadows. Where these shadows are deepened in tone by very large objects, they become richer and darker, assuming, perhaps, a bronze tint.

Under the influence of a brownish gray cloud the snow appears a pinkish or golden yellow in place of the local gray tone, and this deepens into a dull, warm, maroon-coloured shadow with some fine violet half-tints.

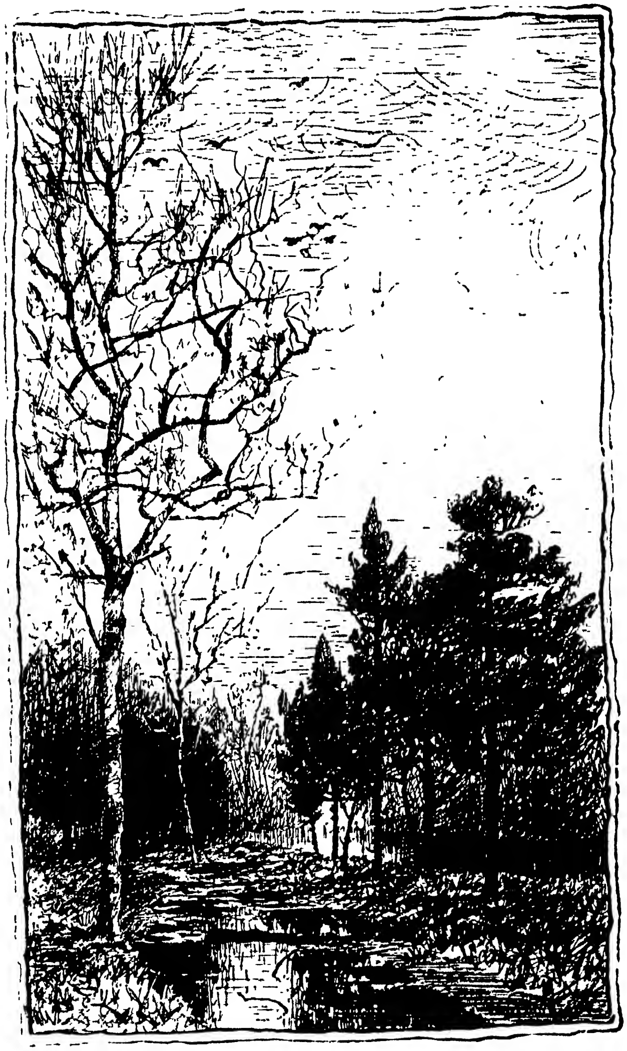


FIG. 100.—UPRIGHT LANDSCAPE COMPOSITION.

We observe again, that when the sky tone is of a still deeper blue the shadows become correspondingly richer and warmer, sometimes almost pure violet, while the lights appear to assume a distinctly ivory-yellow tint.

These observations are taken in the late morning, just before noon. It is a good plan to note the time at which a sketch is made, so that certain effects of light may be classified, and the differences in lights, shadows, and reflection, variations in local tone, and so forth, may assume some logical sequence.

In the early morning we frequently observe, under a clear sky, that the shadows are delicate violet-blue, with vibrating edges, suggesting prismatic colours along the outlines—pink, yellow, green, indigo, blue. This effect is subtly beautiful, and does not last very long.

In the early afternoon, when shadows begin to lengthen, very picturesque sketches may be made: the long slender purple tree trunks now appear to lie stretched horizontally across the whole field, losing themselves at last in luminous, soft, light grays, which fade out against the surface of the distant snow.

At the sunset hour the snow field is full of wonderful colour possibilities.

Yellow-White Snow.—Use in the local tone Yellow Ochre, with a very little Medium, Cadmium, Lamp Black, and Rose Madder. For the shadows mix a wash of Sepia, Cobalt, and Light Red, adding Yellow Ochre and and a little Rose Madder in the warmer parts. Run in separately some delicate washes of pure Cobalt, Rose Madder, and Yellow Ochre (not mixed) along the *edges* of the shadows in parts, softening the tones with blotting paper cut to a point.

The Faint Pinkish Tint reflected from the sky under warm brown clouds: Mix a wash of Rose Madder, Yellow Ochre, a little Sepia, and Lamp Black in the local tone, and add a little Cobalt to these for the shadows. In the high lights here a little Rose Madder with Yellow Ochre, and a very little Lamp Black are washed in.

The Violet-Blue Shadow Tint seen in strong sunlight is washed in with Cobalt, Rose Madder, and a little Sepia; add Lamp Black and Light Red in the deeper touches. At the edges here run some pure washes of Light Red, Cadmium, and Cobalt thinned with water.

Skies for Snow Scenes.—In the winter months you will be surprised to find, in sketching from nature, how early in the afternoon the sunset colours begin to affect the sky, reflecting themselves upon all objects beneath; and you will make some interesting discoveries if you have the patience to paint several studies of an identical landscape, upon consecutive days, and at the same hour, recording the remarkable differences in coloration you have observed. If the conditions are favourable, you will find upon one late afternoon (let us say) that the general colour of a plane of snow spread beneath your eyes will appear to be a soft blue-white, while the warm gray shadows everywhere are distinctly blue in quality, this at times deepening into a rich sapphire tone.

With this effect visible upon the snow, there is much clear light in the sky, growing more brilliant at the horizon, while above your head is a deep, soft blue, with perhaps some thin yellow clouds floating across, which, later, turn into gleaming flecks of gold. More Cobalt or Permanent Blue is used with the local tone of the snow here.

Snow at Sunset.—When the sunset colours are very vivid, showing a great deal of crimson, the surface of the snow appears to be dyed with red for a short time, and the effect is wonderful. For this, mix more Rose Madder with the colours already suggested.

Shadows on Snow of course vary in colour considerably under different circumstances, but the general effect of snow in shadow is a warm, soft purple gray, turning under certain conditions of light to an almost sapphire blue. The more *colour* you can force yourself legitimately to see in these shadows, the more beautiful and brilliant will the effect be upon your picture.

Falling Snow.—Snow on the ground may be studied at leisure; it is a sort of still-life subject, as it were, compared with the restless, hurrying, falling snow, ever varying in its apparent monotony as it swiftly and silently accomplishes its task of covering the lean, bare bosom of the frozen earth. But this apparent monotony is most deceptive, and is one of the pitfalls prepared for the superficial painter. True, if you but look at a space directly before your eyes, the snow may appear to fall in certain regular lines with flakes of equal size and about the same distance apart.

But you must not portray a snowstorm from this *sample*, repeating endlessly a tiresome succession of carefully spaced white spots, monotonous in form and colour, as if showered upon your canvas through a flour sieve. This is not nature, nor is it art. Nature is never monotonous, and, if you are a true artist, you will look for variety, even in her simplest forms; and in your picture you will give an impression of falling snow rather than attempt to show the actual snowflakes. By the variety of direction in the descending flakes you will show us, for instance, if the air is still, or whether a fierce wind is sweeping over the scene, lashing the pelting snow into sharp diagonal lines which meet the earth at an acute angle; or, again, by the slow, lazy, perpendicular chain of large, soft flakes, following each other with the regularity of a metronome, we shall know that this was one of those gray days when the wind slumbered and the snow fell harmlessly, with no afterthought of treacherous drifts and dangerous avalanches. By observing thus, with an intellectual intuition, these indications of nature's moods, an *impression* of snow can be given by the painter's brush upon his canvas which will render his picture interesting through the sentiment he has endeavoured to express, as well as by clever technical representation of his theme.

The Colour of Ice covering a sheet of water will vary according to the colour of the sky, appearing an almost steely blue at some times, while at others it will be a dull whitish or greenish gray. If the ice is "black ice" the reflections will naturally be more brilliant. In this case more Lamp Black and Cobalt are added to the local tone. If the ice is of the dull gray character, a larger proportion of Yellow Ochre, Cobalt, and Sepia will be needed throughout.

Evergreens partly covered with snow, are an interesting addition to the composition of a winter scene. Great tufted branches of pine are extremely picturesque, showing the colour of the dull green foliage in contrast with their pure white garniture. They should be carefully drawn, though without much detail.

Wash in the local tone of dull green with Cobalt, Yellow Ochre, Rose Madder and Lamp Black. In the lights a little Deep Cadmium may be added to these colours, and a thin wash run over the paper. Where deep shadows are seen beneath the branches mix Sepia, Antwerp Blue and a little Rose Madder. Paint the trunks and branches with Sepia, a little Cobalt and Rose Madder for the local tone. Wash in the high lights with a soft blue-gray, which may take a violet tint in parts. Mix for these Lamp Black, Yellow Ochre, a little Cobalt and Light Red.

The outlines, where distinctly seen, may be strengthened in parts with Sepia and Rose Madder. Use a small-pointed camel-hair brush for the smaller details, and keep the outlines of the snow on the branches clearly defined in those parts nearest the eye, avoiding the woolly appearance which comes from too much working over.

Ice-coated Pines.—When the branches of the trees are covered with a shining coat of ice from a smart rain having frozen on the trees as it fell, the effect is brilliant as the direct sun-rays strike th tree. The colours used for painting the *ice* are the same as those given for the snow, but a larger proportion of Sepia and Lamp Black are added to the local tone, and the high lights are smaller and sharper in outline, and are also made with more Black; the shadows in these glittering icicles are crisply painted, and will need more Rose Madder and Lamp Black than are required for the softer grays of the snow.

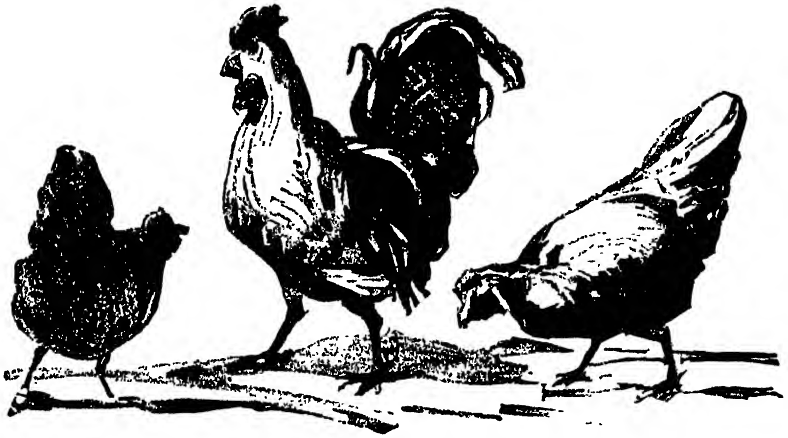
XI. ANIMALS IN THE LANDSCAPE.

It is not necessary that you should be an "animal painter" to note the effective touches of colour given by a red calf, a bay colt, or a flock of yellow sheep, should the opportunity be afforded of sketching any or all of these accessories. It would be discreet, however, not to attempt much detail here, unless you have had some preliminary practice in the drawing of animals. You will discover that horses, cows, and sheep are rather exacting subjects, as each class naturally possesses a distinctive anatomy of its own; and no matter how familiar you may be with the intricacies of the human form, you will find that a certain amount of practical knowledge of their individual characteristics is indispensable in order to render properly the action of these intractable models. Separate studies in colour will be useful, and also careful pencil drawings of heads, legs, and feet; certain movements sketched in with a few lines—perhaps the toss of the horns, the switch of a tail—may be indicated, and the data thus obtained are used in the composition, later.

It is quite possible, however, to secure a good effect, without inviting too much criticism, by partly *losing* the outlines of such objects in shadowy corners (or elsewhere), bringing out sufficient detail of form by a few prominent touches of light, suggesting rather than defining the whole. Sometimes surprisingly little will be necessary to accomplish this—a pair of curved lines of light above, a white or gray patch for a forehead, a square pink touch hinting at a blunt nose; below, perhaps underneath all, a brown line of foreleg, ending in a sharp light at the pointed hoof.

The rest of the body may be almost invisible, except perhaps for a luminous gray half-tint; but see that each of these few touches has the correct form, and that it is in its right place, so that even the old farmer would recognise in your picture the fact that a cow is grazing in the deep shadow of his barn; for if these mere spots of light are truthfully studied in strict relation to the surrounding values, the whole body of the animal will be felt to occupy this space. Such an impression is much more realistic in its effect upon the imagination of the beholder than if every portion had been carefully outlined.

In this same sketchy way one is privileged to treat the drawing of the numerous fowls—chickens, turkeys, ducks, and geese—that are scattered everywhere, making use of them in masses or singly when it is necessary or advisable, and omitting them entirely when they threaten to interfere with the simplicity of the composition. Let us, therefore, regard these indispensable but lively inhabitants of the territory merely as accessories, and devote our efforts principally to securing the beautiful colour effects of less exacting models at hand. The painting of animals as a serious study will be duly considered under its proper head.



MARINE PAINTING.

I. MARINE SCENES.

SEATED before your subject, the first thing to attend to is what artists call "keeping." It is, indeed, also the last thing: that is to say, it should be held in mind all the time. By "keeping" is meant that harmony of tone which, no matter how great the variety of parts contained in a scene, keeps all those parts together. In a marine subject "keeping" depends mainly on the light, which spreads over all a general tint of gray in cloudy weather, of orange with bluish shadows in warm daylight, of rose-colour toward sunset, of violet at twilight, and for every state of the atmosphere there is a special tone.

The First Step is to put a very light wash of this general tone all over the white paper. At morning by the sea or any other expanse of water, fresh or salt, it is likely to be a bluish gray, produced by the fog, which always rises, especially at the water's edge. Grays of various sorts will then give the "keeping" to your picture, and you will produce them with mixtures of Cobalt or Ultramarine with a little Yellow Ochre and a speck of Rose Madder or Vermilion for those of the most aerial sort, Cobalt and Bistre or Sepia for those less coloured, Cobalt and Black for the more neutral. Here the prevailing gray will be a little warmer in tone, and will require a little more Yellow Ochre and Vermilion; there it will be colder and will require more of Cobalt and Black.

The scene lit by the gray light of a clouded day is, perhaps, the easiest for the student.

The Sky, it will soon be noticed, is always lighter toward the horizon. Even when dark clouds appear low down at morning or evening, while the rest of the sky is clear or filled with light clouds floating high that catch the sun, there is still a difference between the farther clouds of each sort and those that are nearer. Those that touch the line of the horizon are less dark than those above them; and in drawing clouds, it is of the greatest importance to reproduce truly these "values" or relations of lighter and darker. For clear skies, a mixture of Cobalt and Ultramarine will usually answer, with, on occasion, a little Carmine to give the violet tinge often observed toward the horizon. If there are white clouds, they should be reserved when washing in the sky: that is to say, the colour should be carried around them. Then, when the sky is dry, the clouds may be modelled slightly with a few washes of gray.

Light clouds which have no very definite form, but melt, as it were, into the blue, may be taken out with a dry brush or sponge while the general tone of the sky is still wet.

Do not attempt stormy skies until you have made considerable progress. Presenting violent contrasts of dark gray, white, and blue, together with all sorts of gradations and blendings of tones, and changing form every second, they are the last difficulty of marine painting, seldom quite conquered even by veterans. A cloudy sunset is also too complicated a subject for the beginner.

The Sea.—The nature of the sea depends very much upon that of the shore. On a shelving shore you get long and regularly recurring breakers. If you watch you will find the waves follow almost exactly the same lines. The swell makes its appearance at the same place. It begins to come up and curl over at the same points; it breaks; the foam rolls up upon the beach, and runs back again to meet the incoming wave in precisely the same manner. On a deep, rocky shore all is different. The water may rise and fall with scarcely any commotion, or it may be hurled in vast masses against the rock, causing perfect avalanches of spray, and, swinging back, meet with another huge wave; and the resulting mass may either subside quietly or come on with greater force than ever. Much depends on the character of the bottom. If the rock goes sheer down into deep water, there is usually but little agitation of the surface; but if sunken rocks come near the surface, cross currents are set up, and there is much tumultuous motion.

It requires not only observation, but

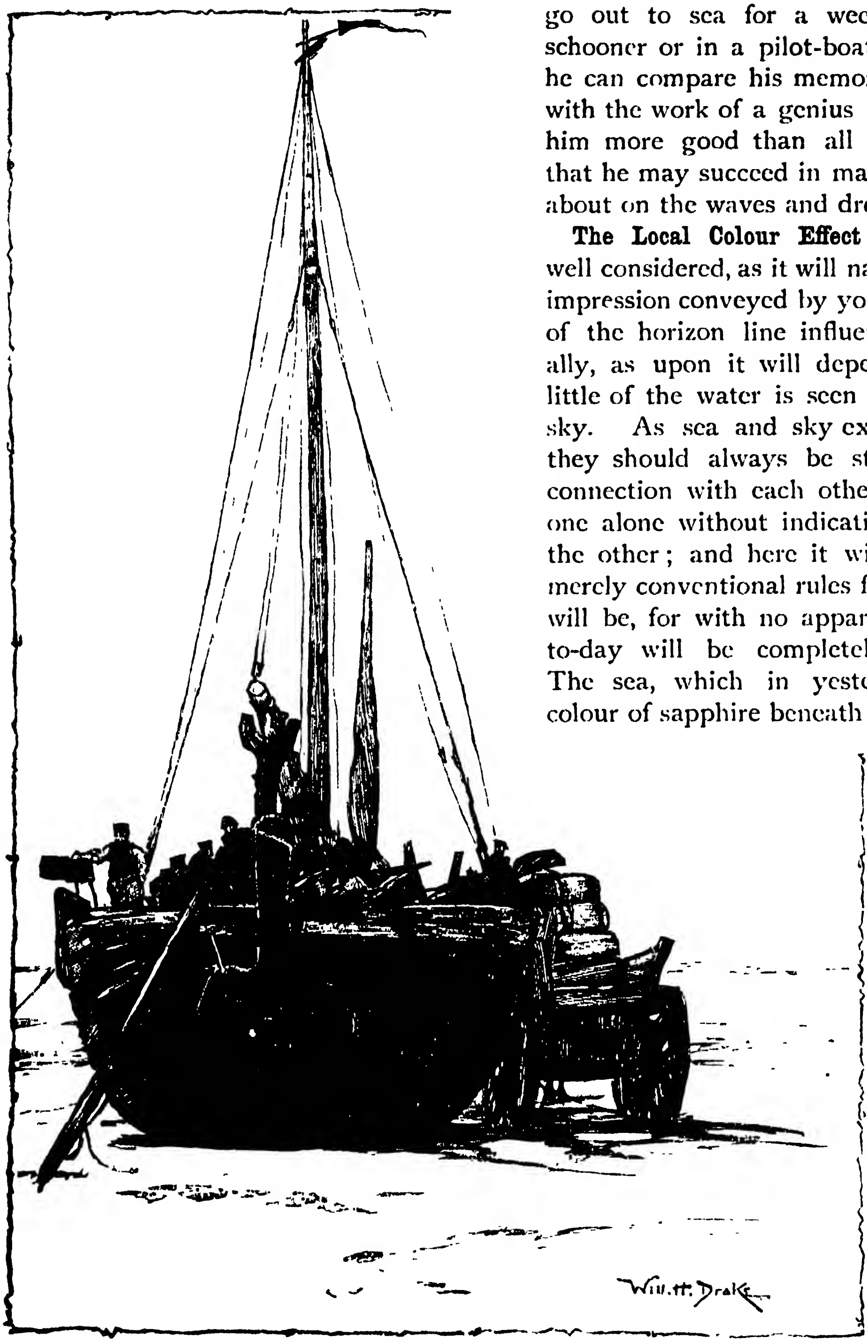


FIG. 101.—BOAT ON THE STRAND, LOADING.

memory, and, we may add, imagination to paint waves. The young marine painter should do his sketching about shore, and on calm days; but he should every now and then go out to sea for a week or so, on a fishing schooner or in a pilot-boat; and, on his return, if he can compare his memories of what he has seen with the work of a genius like Turner, that will do him more good than all the rough memoranda that he may succeed in making while being tossed about on the waves and drenched with their spray.

The Local Colour Effect of the sea should be well considered, as it will naturally be the strongest impression conveyed by your picture. The placing of the horizon line influences this effect materially, as upon it will depend how much or how little of the water is seen in comparison with the sky. As sea and sky exert a mutual influence, they should always be studied together and in connection with each other. Never sketch either one alone without indicating the tonal quality of the other; and here it will be seen how useless merely conventional rules for the painting of either will be, for with no apparent reason, the effect of to-day will be completely reversed to-morrow. The sea, which in yesterday's sketch was the colour of sapphire beneath a turquoise sky, is black and gray, brown and green to-day, with the same blue expanse overhead: but there is always a note of harmony somewhere between the two; and nowhere else will it be more strongly apparent than at the horizon, where at times the soft tints in the aerial perspective cause sea and sky to assume so close a resemblance as to be quite indistinguishable.

The Horizon Light.—Where sky and water meet there is sometimes a light streak. This can be taken out with a handkerchief after the place has had a brush half full of clean water passed over it.

The linear perspective of the ocean plane is of course most distinctly indicated by those waves in the foreground and middle distance; and in the details here to be observed are found the principal character and movement of that wonderful rhythm with which they seem to break with endless regularity along the shore.

The Chief Lights.—The highest light in a conventional sense strikes a wave upon its crest, which naturally presents a salient point for the sun's rays. The next in importance of value is the reflected light which rebounds from its curved and polished surface, as it rolls in shoreward. The third light to be studied, and that which gives the most variety of colouring, is produced by the slanting sun rays shining athwart the water, bringing out lovely tints of golden green, tender and translucent, like tourmaline and emerald beneath a crest of pearl. The crest of a wave should be scraped out with a sharp knife rather than put in with body colour. The white of the paper may, however, easily be reserved by stopping out the high lights with the yolk of an egg, just as you would apply the lights in body colour. Any spot on which the egg is dried can be washed over and over without disturbing it. When the drawing is done, a rubber or a bit of bread will remove the yolk and leave the lights.

Waves breaking on the shore will usually be warm in colour, because of the sand and seaweed underneath.

Black should rarely be used except for the hulls of vessels and the neutral grays of rainy skies. Sepia is very useful. So is Burnt Sienna: it gives a good low-toned green with Antwerp Blue, and is valuable in painting the stained sails of some fishing vessels, ochreous rocks, and in certain autumnal and wintry sunset effects. Yellow Ochre is indispensable A light wash of it communicates a sunny tone to every colour superimposed. With Antwerp Blue it gives a full rich green; with Cobalt, a gray-green of exceptional quality. Toned with a little Sepia or Burnt Sienna it makes a good tint for sandy beaches, and mixed with Rose Madder and Cobalt it furnishes a charming range of aërial grays.

An interesting study of the sea at night is sometimes afforded by the colour of silvery moonlight upon the waves contrasted with the strong red and yellow reflections cast by a hanging lantern from the mast of a tossing lightship. By this yellow light one is usually enabled to distinguish the local colour of the waves in the foreground; the general tone of the water is apt to become gray and misty in the distance, where the horizon line disappears, perhaps, in lowering clouds.

Sea-going Craft.—Next to the study of sea and sky, that of all sea-going craft is of the greatest importance. The marine painter should be something of a sailor himself; at least he should know just how a ship should behave under all conditions of weather. Not only should his pencil and sketch-book be constantly in use to record the result of his observations along shore, but he should know all about the rig of a ship, how the light strikes her sails when she "goes about," as well as under all other conditions; and he must never be in doubt as to what tack she is sailing on. If he is deficient in such knowledge, he will be sure to make some blunder of fact, which, trifling as it may seem in itself, will condemn him as a "land-lubber" in the eyes of any nautical man.

Various Colour Combinations.- Sails of a reddish brown may be made very picturesque, but it should be remembered that a warm brown sail has always some gray in it. It is important to have always within easy reach of your brush some Cobalt or Indigo, so that you can graduate the warmth or coolness of your grays and browns as occasion arises.

Brown Sails.—Vandyck Brown and Light Red; or Vandyck Brown, Light Red, Yellow Ochre; or Vandyck Brown, Brown Madder, Light Red.

Reddish Sails.-Burnt Sienna; or Brown Madder; or Burnt Sienna and Light Red; or Brown Madder and Light Red.

Very Dark Sails.—Sepia and Crimson Lake; or Sepia and Brown Madder; or Blue Black and Crimson Lake.

Bright Venetian Sails.—Light Red and Vermilion.

Light Sails.—Raw Sienna; or Yellow Ochre and Burnt Sienna; or Yellow Ochre and Raw Umber.

Skies.—For colour combinations for skies and clouds see LANDSCAPE PAINTING (p. 90).

The Sea.—Antwerp Blue or Indigo, Gamboge, Light Red; Cobalt and Light Red; Raw Sienna and Cobalt; Cobalt and Burnt Sienna; Indigo, Yellow Ochre, and Crimson Lake.

Near.—Burnt Sienna, Brown Madder, Ultramarine; Raw Sienna, Cobalt, Vandyck Brown.

Near and Stormy.—Indigo and Raw Sienna.

Calm.—Indigo, Gamboge, Crimson Lake.

Rough.—Raw Sienna and Ultramarine; Raw Sienna, Cobalt, Brown Madder.

Stormy.—Indigo; Indigo and Yellow Ochre; Indigo and Burnt Sienna: Indigo and Vandyck Brown; Lamp Black and Light Red.

Seaweed.—Indigo, Crimson Lake, Sepia.

Ships' Hulls.—Burnt Sienna; or Vandyck Brown; or Yellow Ochre and Burnt Sienna; or Lake and Vandyck Brown; or Brown Madder and Indigo. The inside colouring should be the duller and much cooler.

Sandy Beach.—Yellow Ochre, Light Red, Cobalt; or Yellow Ochre, Light Red, Blue Black; or Raw Umber and Rose Madder, with addition of gray where the reflection of the sky runs into the wet sand. Where Cobalt and Blue Black are mentioned above, only the least touch will suffice.

Rocks.—Vandyck Brown, Cobalt, Light Red. Leave light the parts where seaweed is growing, and paint them afterwards with Burnt Sienna and Indigo.

Cliffs.—*Chalky*: Ultramarine, Light Red, Yellow Ochre; or Cobalt, Light Red and Yellow Ochre. *Warm*: Brown Madder and Ultramarine; or Light Red and Indigo; or Yellow Ochre and Vandyck Brown. *Cool*: Ultramarine and Blue Black; or Indigo and Light Red; or Cobalt and Light Red; or Sepia, Ultramarine and Crimson Lake.

Smoke.—Cobalt and Chinese White; Cobalt and Blue Black.

Steam.—Scumble a little Chinese White over the underlying colour.

FIGURE AND PORTRAIT PAINTING.

NO one should attempt figure painting who has not learned something of modelling the face, through the medium of charcoal or crayon. Before colour is touched, the drawing must be as perfect as possible, with the shadows and half tints fully indicated. Let us choose our first subject from life. Let it be, say, a portrait bust of a fresh-coloured young lady, with golden hair and brown eyes, attired for walking, with black hat and feather, black fur boa, and warm gray dress, in the corsage of which are pinned a few rich red carnations as a touch of colour.

First stretch Whatman or "O.W." paper by wetting it on both sides, either with a sponge or under running water, and then putting it in a frame made for the purpose (see p. 62), or pasting it on a board around the edges with stiff paste.

Set the board flat, to dry. The drying process must not be hurried by artificial heat; this would cause too sudden contraction, which if it did not crack the paper or draw it away from the edges generally, would result in an uneven surface.

When the paper is thoroughly dry, draw the design in very carefully with a fine-pointed pencil—HB is of the right degree of hardness. Do not be satisfied until the drawing is accurate and clear.

Having made your pencil sketch, wet the entire surface of the paper. Wait until it is half dry, and begin with the prevailing tint of the face.

A complete palette (for painting the whole figure as well as the head) will consist of Light Red, Vermilion, Scarlet Vermilion, Light Cadmium, Yellow Ochre, Indigo, Cobalt Blue, Permanent Blue, Emerald Green, Rose Madder, Lake, Raw Sienna, Burnt Sienna, Raw Umber, Sepia, Vandyck Brown and Lamp Black.

Begin the painting by blocking in the shadows of the face with Raw Umber and a little Cobalt Blue mixed, for the darkest tones; substitute

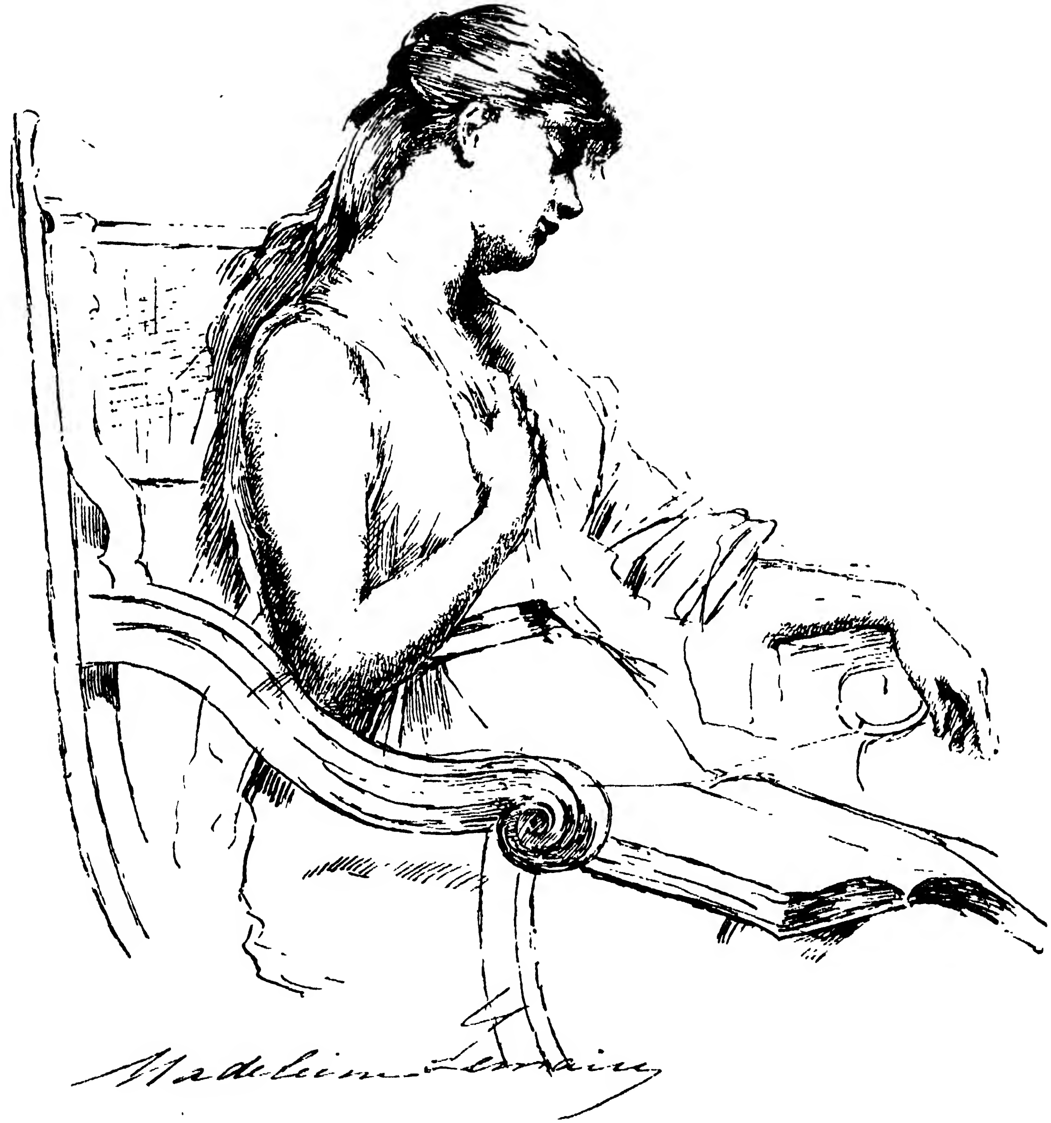

Madeleine Lemaire

Fig. 102.—Painting in Water Colours. Pen-and-Ink Study, by Madeleine Lemaire, for her Picture.

Yellow Ochre for the Umber in the more delicate shadows around the mouth, throat, forehead, and sockets of the eyes. For the dark, sharp markings in nostrils, eyes, and lips, add to Raw Umber a little Rose Madder. Put in the eyes and eyebrows with Raw Umber toned with Ivory Black.

Work freely with a full brush while putting in the shadows ; this is essential to their transparency. For the hair use Naples Yellow, Yellow Ochre, and Raw Sienna. Lightly wash in the fur boa with a mixture of Lamp Black, Yellow Ochre and a touch of Cobalt Blue. This mixture will also serve for the local wash on the dress and hat.

Before putting in the dark rich shadow which we will assume is required against the face, the local flesh tint must be freely washed in with a faint tint of Scarlet Vermilion. The shadows beneath being quite dry, the wash is lightly carried over all.

When this painting in its turn is dry, float in a faint tinge of Rose Madder for the cheeks. The same colours are used in working up for the foundation, with the addition of a little pale Lemon Yellow in parts where a very yellow tone prevails.

Add to the colour for the hair, in the second painting, Raw Umber and Black, to modify its brightness.

Rich black tones are required for the hat and fur (except, of course, where the tone of the first painting is retained for the lights), but these cannot be obtained by the use of black paint, which employed alone always looks dull and spiritless. Make your black : a mixture of such colours as Indigo, Crimson Lake, and Burnt Sienna will give just the richness and depth needed.

It is always best to secure the pencil drawing by blocking in the shadows first, and then, when they are absolutely dry, the local tones are run in freely all over.

The flowers in the corsage may be painted with Scarlet, Vermilion, Rose Madder, Raw Sienna, and Black. The buds and stems may be put in with Lemon Yellow and Black mixed.

A Half-Length Subject.—The pen sketch by Mme. Madeleine Lemaire which we give herewith was the basis of an exquisite water-colour painting by that distinguished artist. The coloration of the original is indicated in the following suggestions for treating the design.

First sketch in lightly the general features of the composition, using a soft lead-pencil. Begin the painting, by washing in the general tone of the background, which is a warmish gray. Use for this Lamp Black, a little Cobalt, Yellow Ochre, and Madder Lake. In the darker touches, add a little Raw Umber and Burnt Sienna. Use plenty of water and let the wash flow sometimes, so to form the natural outline of the object represented, where it comes in contact with the background. The chair, which is black walnut, or some similar dark wood, is painted with Sepia and Burnt Sienna in the local tones: add Lamp Black and a touch of Cobalt in the shadows. The high lights are left bare, or they may be taken out afterward with blotting-paper. For the cushion and the back of the chair (which are crimson velvet) use Rose Madder, Yellow Ochre, Lamp Black, and Raw Umber, adding Burnt Sienna in the shadows, and a very little Cobalt in the half-tints. The hair (which is reddish gold) is washed in at first with general tones of light and shade ; use Yellow Ochre, Light Red, Raw Umber, and a little Lamp Black. In the deeper shadows, add Burnt Sienna, and in the half-tints and high lights use a little Cobalt.

The flesh is most delicate in its general tones, and should be very carefully managed. Begin with washing over the whole surface of both face and hands with a local tone made with Yellow Ochre and Rose Madder, with a very little Cobalt and Lamp Black. Delicate greenish half-tints are made with Cobalt, Yellow Ochre, and a very little Lamp Black, Rose Madder, and Light Red. For the shadows use Raw Umber, Lamp Black, Light Red, Yellow Ochre, Rose Madder, and a touch of Cobalt. Paint the lips with Rose Madder, Light Red, and Vermilion, shaded with Raw Umber and a very little Lamp Black.

The drapery, except that thrown over the left arm and seen on the left side falling below the waist of the lady as far as the rail of the chair, is white and needs very delicate shading. Wash in first a general tone, made with Lamp Black, Yellow Ochre, Cobalt, Rose Madder and Burnt Sienna. In the shadows, add more Burnt Sienna, and in the half-tints more Cobalt. Leave the high lights clear, and afterwards wash a slight tone over them if necessary.

The other drapery is rich blue, which may be painted with Antwerp Blue, Yellow Ochre, Rose Madder and Raw Umber, with the addition of Lamp Black and Burnt Sienna in the shadows.

The edges of the book are red: for this use Light Red, Rose Madder, Yellow Ochre, and Sepia, with a little Cobalt and Lamp Black added in the half-tints and shadows. The slipper is pink.

The Flesh.—There are four general rules for painting flesh, the observance of which is so important to success that it would be well to commit them to memory. They are as follows:—

1. All the shadows of flesh must have gray edges.

2. The darkest parts of shadows are near their edges, the middle being lighted by reflected light.

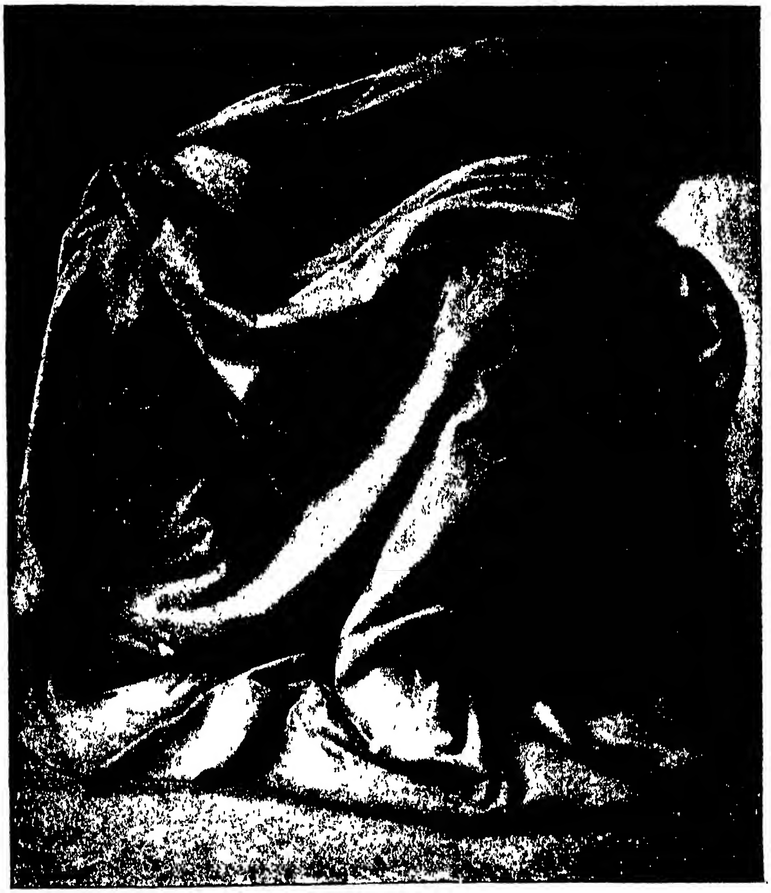


FIG. 103.—STUDY OF DRAPERY. PENCIL DRAWING, BY LEONARDO DA VINCI.

3. Strong shadows of flesh always incline to red.

4. Put gray tints between the hair and the flesh, bluish tints on the temples, and greenish tints over the sockets of the eyes.

It is plain that, for good effect, the tints of the face should so blend, even in the shadows, that there will be nothing harsh or striking either in tint or tone. It is a matter of choice whether the shadows are washed in or stippled—that is, worked in with the point of the brush in little dots of colour. With large heads this is almost impossible to manage, but with very small heads it is hardly possible to work in any other way. In strong, minute shadows the perpendicular stroke with the brush is absolutely necessary.

Hair.—If the paper has dried around the edge of the hair, around the face and around the background, wet it again with clear water. Almost all colours of hair will look gray in the high lights, therefore wash those in first. Permanent Blue and Raw Umber will be suitable in almost every case; if not, a thin wash of Lamp Black. Then, in appropriate tints, lay in the shadows; the middle tints will easily blend with a half-dry brush. Let the strokes of the brush follow the direction of the flowing of the hair. If the paper is moist beyond the hair, lay in the background broadly, with a large brush, darker in tint near the hair, lighter as a rule on the shaded side of the head, and darker on the lighter side of the head—whichever is preferred.

Light Golden Hair.—Lay in with Naples Yellow, Yellow Ochre, and Raw Sienna; when this is dry, modify with Raw Umber and Black.

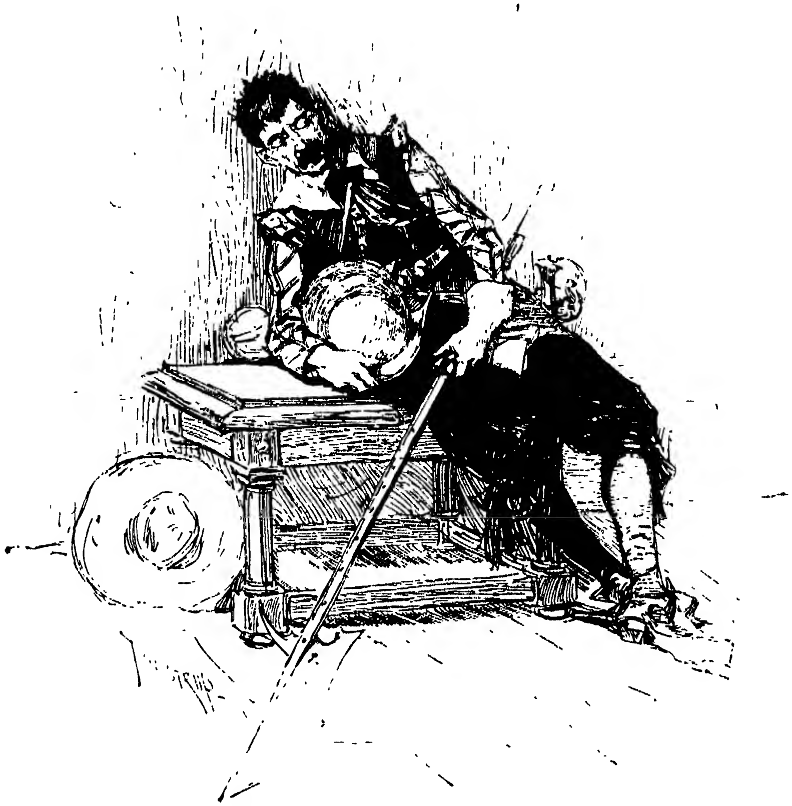


FIG. 104.—WATER-COLOUR PAINTING. THE COSTUMED MODEL POSED FOR A PICTURE.

The model portrayed here fell asleep, and the artist made the best of the incident, calling his picture "The Tired Sentinel," instead of "The Faithful Sentinel," as he had at first intended.

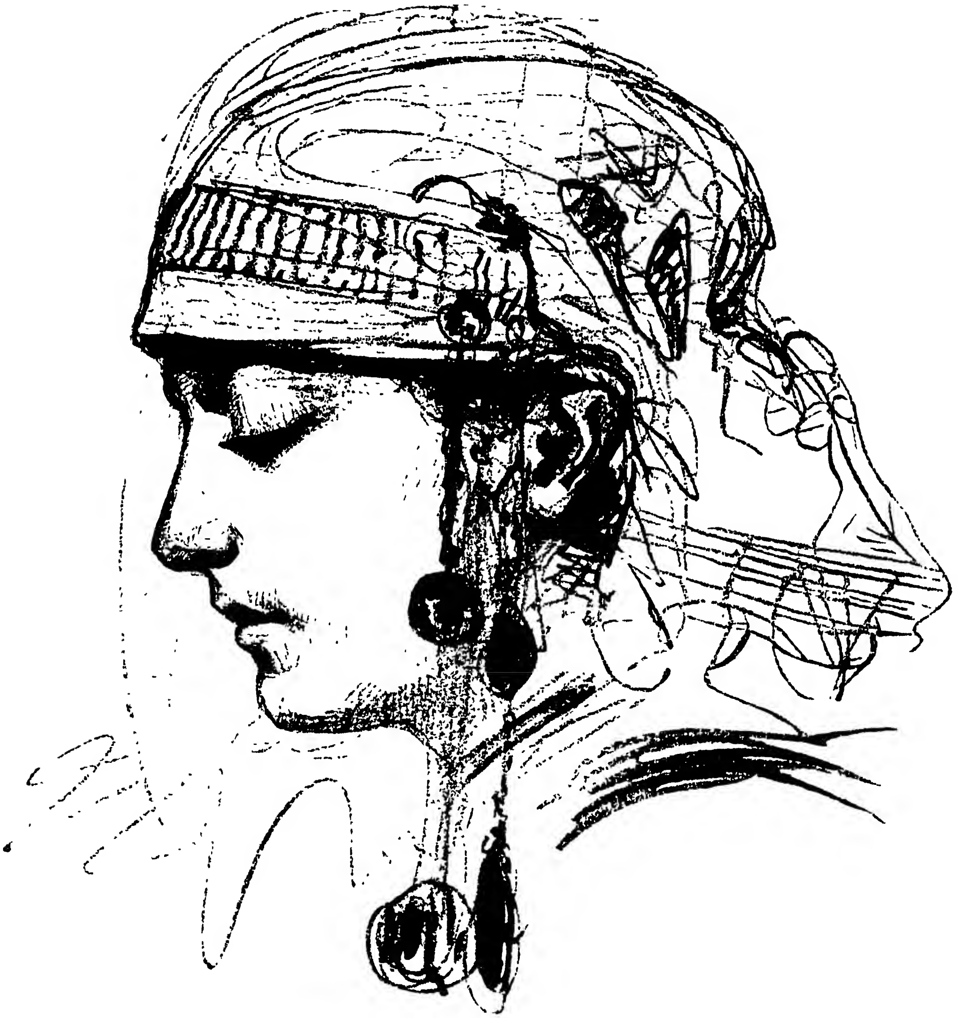


FIG. 105.—LEAD-PENCIL STUDY OF A HEAD.

Flaxen Hair.—The lights may be formed with Ochre; the shadows have often a greenish hue.

Auburn and Chestnut Hair.—The lights of Neutral Tint inclining to purple, the local colour Burnt Umber, the shadows glazed with Lake.

Red Hair.—For the lights, Ochre may be used; Venetian Red and Sepia or Burnt Sienna, for the local colour; Lake and Sepia for the shadows.

Dark Brown Hair.—Lights, purple; local colour, Vandyck Brown and Sepia; shadows, warm.

Black Hair.- Lights, Neutral Tint; local colour, Indigo, Lake and Sepia, in such proportion as may be required.

Gray Hair.—Cobalt and Sepia modified, as may be required, with Neutral Tint and Burnt Umber.

A great deal depends upon the high lights of the hair; if these are correct in tint the prevailing colour is easily managed.

The Eyes. *Blue Eyes.*—Cobalt and the least touch of Sepia.

Gray Eyes.—Cobalt with a trifle more Sepia.

Brown Eyes.—Vandyck Brown and Sepia.

The Lips.—Rose Madder, Light Red and Vermilion, shaded with Raw Umber and a very little Lamp Black. Only the high light on the lower lip will bear a touch of Vermilion.

Portrait painting is so much more general in oil colours than in water colours that much of what has to be said on the subject will naturally be looked for under the first-named division of the present volume, where the subject is more comprehensively treated.

It is presumed that you will not attempt to paint figures without having studied drawing from life. So much depends upon correct drawing that the handling of the colours seems almost of secondary importance. Presumably, too, you have mastered the combinations of colours used for painting flowers or landscapes, and heads, and the necessary knowledge of manipulation therefore has been already reached. With the eye so trained, little more need be said by way of suggestion. We can hardly, however, too strongly enforce this caution: keep your colours transparent, simple and low in tone. That is to say, do not use the more brilliant colours in draperies or accessories; the flesh tints of the face and hands look the brighter and clearer if these are sober.

Aim to select harmonious tints for complexion, eyes, and hair. Make studies of drapery before attempting a model. You can do this by throwing a plain-coloured shawl over a chair, or paint simply the skirt of a person obliged to remain quiet an hour or two at some occupation. It is exceedingly tiresome to sit for a beginner, so it is a good plan to utilise the unconscious pose of a friend. For this purpose almost any one will sit in a good light.

ANIMAL PAINTING.

I. CATTLE.

"If you wish to paint the soul of an animal," said Charles Jacque, "go to nature only to refresh your memory of details; the composition and the movement should result from what you already know and feel."

This is good advice. The artist finds the study of animal life extremely difficult and full of annoyances. He can best lessen its drawbacks by making a thorough study of the general form and anatomy of his subjects from the cast in his studio. When he goes to nature he will be armed with a certain amount of knowledge, and his eye will be trained to a certain experience with the objects he has to deal with, of which he will soon discover the value.

Good prints are to be had, and a few good casts of cows, sheep and horses. A study of the anatomical animal from print or cast is also to be recommended.[1] There are errors and omissions in both prints and casts, but a good general idea of the subject may be obtained from them, and a resort to nature will show the errors to be corrected and the omissions to be supplied. Study your originals closely, and learn to copy them as correctly as possible. Use the pencil wherever you can, because it is upon this tool you must depend for your sketching from nature. Cultivate a correct eye and a ready hand, and try constantly to draw from memory what you have been studying. If you are in a city where public or private galleries are accessible, study the pictures in them, note how they are painted, and whenever you go home from such an inspection endeavour to fix upon paper from memory what you have seen in your chosen field. When you obtain an opportunity to study pictures of cattle in action never neglect it. Such pictures, if they are good, are the fruit of ripe experience and study, and should be full of valuable lessons for you.

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[1] Mr. W. Frank Calderon has a school of animal painting (54, Baker Street), where there is a unique collection of casts and anatomical drawings. He makes his pupils work simultaneously from the life and from the cast, as well as study anatomy.

In all your early studies, cultivate your eye and hand in the art of seeing and doing things correctly, without groping. First, study your original, whether it be picture, print, or cast; analyse it, compare its proportions, and fix the angles, inclinations, and modulations of its form. Then try to draw it without corrections. You will not be able to do this, of course; but the clearer your idea of your subject is, the nearer you will be to it. Never find an error without correcting it. Better destroy a dozen efforts than wilfully permit the mistakes in one to go. You will need all the expertness of eye and hand you can command, before your studies are completed. The foundation of all art is knowledge; the foundation of all knowledge is study; and the backbone of study is sincerity. Do your best, and never rest satisfied until your best is done; and while you are doing your best, study the better that others have done before you. Try to understand what they have attempted to do, and you will be amazed to find how your store of knowledge and ability to execute will increase—insensibly, but none the less surely.

Just as soon as you feel sufficiently skilful or courageous, take your sketch-book and go out to nature. If you can obtain access to cattle in a barn or shed where they are stalled and quiet, draw them there. Use your sketch-book and pencil diligently; draw details—heads, shoulders, rumps, legs, hoofs, ears—whatever it may be. Make studies of the horns of your cows and beeves, for every set of horns has an individual character, is differently shaped and set; study their heads closely—they are all different in their details, however close their general resemblance may be. Make yourself familiar with the markings of horned cattle, the fleeces of sheep, and their build and all the rest. Sheep all look alike to the general observer, but their variety of character is infinite. They are not especially satisfactory to paint, as their picturesqueness lacks variety of colour and marking. But they do not lack variety of individual traits, and are an admirable subject of study. In all cattle, indeed, the acute observer will notice a distinct race or hereditary difference. A breeder of cows or horses or sheep will pick out individuals in a photograph. He knows them by experience. You cannot, therefore, generalise them all into any conventional forms, and make a picture worthy of the name.

The best time to study cattle is toward evening, or at high noon. In the latter case they will be found quiet and sluggish under the heat of the day, and in the former, easier in their positions and less inclined to sudden changes of posture by weariness. Some of the most useful studies of cows are made when the animals are restful under the hands of the milker.

You must prosecute the study of cattle in action in the field, sketch-book and pencil in hand. You must follow them, seizing each opportunity when they pause, if only for a moment, to add to your memorandum. It is a good plan to tie your model up with a long tether, and then watch it as it moves, catching a note of one movement here, another there, as occasion serves. The pencil is most useful in sketching, because it is impossible to carry a large book or pad about with you, and close memoranda cannot be made on a small scale with any other tool. In all these field studies you are seeking what only field study can give you—a knowledge of the living animal, from which alone can you draw any real inspiration.

Tinted paper is useful in that you can sketch out the colour markings of your models on it with a bit of chalk. These markings have so much to do with the picturesqueness of cattle that you cannot get too many memoranda of them. Often, when your models are too restless to study detail from, you can put in your time by locating on paper their markings.

Whenever you get the chance, study your subjects on a large scale. When you can control your model, make your studies as near life-size as you can. The sketch-book and pencil are recommended for convenience. But if you can set up an easel and draw or paint on a surface as big as your original, try it, and you will be the gainer.

It is rather rash to attempt to lay down any rule for setting a palette, because your subjects vary so much in character that no one rule will apply to them. But as it is part of the plan of the present volume to give, wherever possible, "palettes" or sets of combinations for painting the objects described, we will not omit in this instance any suggestions of the kind, which the student may be able to turn to account.

Light Cattle. Burnt Sienna, or Burnt Sienna and Brown Madder; Yellow Ochre and Brown Madder; Yellow Ochre, Brown Madder, Crimson Lake; Raw Sienna, Brown Madder Crimson Lake. For dun-coloured cattle wash in with Yellow Ochre; then Rose Madder and Cobalt for the pinkish-gray tones near the lights. For the browner tones use both Raw and Burnt Umber. For the horns use Vandyck Brown and Raw Sienna; or Raw Sienna, Indigo and Vandyck Brown.

Darker Cattle.—Brown Madder; or Burnt Sienna and Brown Madder, shaded with Vandyck Brown in the darker portions; or Vandyck Brown, Sepia, and Crimson Lake.

Very Dark Cattle. — Brown Madder and Indigo; Sepia and Payne's Gray; Sepia and Brown Madder; Vandyck Brown and Crimson Lake.

Black Cattle.—Blue Black and Crimson Lake; Ultramarine, Sepia and Crimson Lake; Brown Madder, Indigo, Crimson Lake; Sepia, Crimson Lake and Indigo. A touch of Indigo will give the deep tone of the pupils of the eyes.

Commence a study with a careful, but not minute, general massing in of your model, first sketching it with the pencil and establishing the proportions, and then using the brush. On this you work. You may sometimes start two studies on the same canvas, side by side, so that when your model shifts from one position to another, you can let the first work rest and commence the next. Cattle will often shift back and forward in this way, enabling you, with a little shifting of your place, to gain your object with these duplicate studies.

Oxen are magnificent and docile models. They have a noble breadth and solidity of form, and a most majestic movement. They are, moreover, gentle and easily managed. Their forms are often too heavy, by reason of over-feeding, but they are admirably adapted for purposes of study in the earlier stages of your artistic development. The broad rules for the study of cattle painting may be set down as follows:—

I. Learn to draw from the flat and the cast.
II. Study stalled cattle.
III. Go into the open field.
IV. Study in colour.

Meanwhile, never cease to observe and use your memory, and do not study cattle alone. Draw men and women, houses, trees, gates—anything, in short, that can be drawn; for anything that can be drawn is worth drawing, and the better you can draw and paint everything, the better will you be able to draw and paint what you prefer.

Sheep.—Raw Umber, Yellow Ochre, and Vandyck Brown; Raw Umber, shaded with Cobalt and Light Red; Yellow Ochre, shaded with Indigo and Light Red. Yellow Ochre and Burnt Umber is generally useful for the local tone; and Cobalt and Light Red for the grays, strengthened in the darker passages with Vandyck Brown and Ultramarine. The touches of red often seen on sheep may be put in with Light Red and Indian Red.

Rams.—The general colouring, of course, is the same as given above. For the purplish gray tone common in the face and parts of the body, use Cobalt and Brown Madder. Add Vandyck Brown for the darker markings. For the dark markings of the horns, round with Burnt Sienna and Vandyck Brown.

II. HORSES.

A young animal painter commonly begins by attempting the study of all sorts of animals; but the difficulties are so great that he generally ends by confining himself to one, or two species at most. It is, however, wise to retain a certain variety in one's studies, and, with due regard to convenience of observation, to choose two or three species quite far apart—horses and dogs, for instance, or deer and poultry, rather than horses and donkeys, or deer and cattle. Variety must also be given to one's studies by the need of providing picturesque and natural backgrounds, whether farmyards and stable interiors, or views of meadows and forest. If one is so situated as to be able to make specialties of some wild species and of a different domesticated species, these, with the needful studies of interiors and landscape and incidental studies of other animals, will provide him with so much variety that he will be in little danger of falling into a rut, or of tiring out his public.

In painting a background, of whatever sort, to an animal picture, the values are by far the most important consideration. Provided the animals are well drawn and painted, the drawing of the background may be of the most summary sort—merely blocked out, in fact. The colour, too, may be far from exact; but if the values, however broadly observed, are not correct, the background will not keep its place, and the animal would have appeared better on a background of plain canvas.

Make a practice of taking measurements of a horse with a tape. Take the length of the head from crown to muzzle. Use that as standard of measurement for the other dimensions, of which these are the most important: The total length from breast-bone (sternum) to rump; the length from shoulder to hip; the total length of the limbs and the measure of each division of both fore and hind limbs; the upper slope of the shoulder, about equal to the length of the head; and the measurement from belly to ground. Take many sets of such measurements for each position of the animal. They will ground in the memory what is constant and what is variable, and will prepare you for sketching rapidly and at the same time correctly.

If possible, supplement these measurements with studies of the skeleton. Make many drawings of the entire skeleton and of the several bones. The former may be mere outlines, but the separate drawings of the bones should be carefully shaded. Try to reproduce these drawings from memory, and compare those memory sketches with the original studies.

Begin then from nature to make careful studies of heads in profile, full face and three-quarters, always measuring lengths and breadths. Draw the head full-face inscribed in a parallelogram, the sides of which should touch the salient points of the cheek-bones. The diagonals of the parallelogram meet at the base of the brain and the beginning of the bridge of the nose, a little below the line drawn through the pupils of the eyes. Below the former, the lines of the face converge rapidly toward the median line of the nostrils; and the whole face may be roughly bounded by an oval inscribed in the rectangle.

When one sets about drawing a two-thirds face, the bounding rectangle, touching the same points, will be appreciably narrower, and the oval must be drawn as if in perspective—that is to say, with its off side much straighter than its near side. The median line of the head will also come nearer the off side. The side face falls always in a triangle, with the apex at the point of the nose or the protruded upper lip. It is also well to conceive it as included in a long oval. Observe that the lack of fleshiness in the horse's head makes the general contour of the head more like that of the denuded skull than is the case with most other animals. The forms of the latter can always be made out in the living animal. Studies of ensemble should follow—side views, back and front views making also separate studies of the limbs from all points.

Draw the animals standing and recumbent, always beginning by indicating the proportions of the enclosing parallelogram, so that when your model moves and the sketch has to be abandoned, at least the relative positions of the parts not sketched will be given. In this way, by attention to these absolute facts, the future usefulness of incomplete studies will be many times doubled.

White Horses.—Cobalt and Light Red.

Light-Coloured Horses.—Light Red and Brown Madder; Burnt Sienna and Brown Madder.

Bay Horses.—Burnt Sienna, Yellow Ochre, and Cobalt; Ultramarine and Vandyck Brown for the mane.

Dark Bay.—Brown Madder; Brown Madder and Sepia.

Chestnut.—Burnt Sienna, Yellow Ochre, and Cobalt, as for the Bay; but use with less strength, and the lights are more pinkish and light. For the mane, Light Red and Brown Madder. Or Burnt Umber and Raw Sienna for the local colour, and Cobalt, Light Red and Rose Madder for the lights.

Dark Brown.—Vandyck Brown, or Sepia and Crimson Lake; or Vandyck Brown and Ultramarine, the latter being used strongly in the mane. For the eyes, Gamboge and Burnt Sienna; nostrils, Vermilion and Light Red.

Gray.—Cobalt and Vermilion for the lighter tone, Indigo and Indian Red for the darker tone; for the darker markings, Vandyck Brown and Ultramarine.

III. DOGS.

Young people who are naturally inclined to paint animals are apt to imagine that it is not practicable for them to work from life, and they turn to other things. Now, next to still-life, there are no models more accessible and more tractable than some of our domestic animals. The dog is most easily taught to obey, and will, without fear or reluctance, follow us to the highest studio and pose for us—never embarrassing us by showing constraint or fatigue, like the human model. His positions are more limited, but they are always natural.

If expediency drives an amateur to painting a favourite dog before having the necessary practice in drawing from the round, he may have it photographed in an easily assumed position, and copy form, light, and shadow at his leisure, enlarging, if he likes, by marking off corresponding squares. Afterward he can place the dog in the same position and, as nearly as possible, in the same light, and the painting from life may begin. The photograph must be kept constantly at hand for reference. Surroundings in this case, as in all others of portraiture of animals, must be low in tone and altogether subordinate, in order to give the subject prominence.

The management of light as well as outline has a great deal to do with form. Carefully study its distribution and its several degrees, and modify its tones to suit the local colour. If this is black, the lights and the gray half-tones will be bluish and the shadows warm. If dark reddish brown, the lights and half-tones will be purplish and the shadows of a somewhat madder-like warmth. If light yellow brown, the lights will be a pale yellow or gold and the half-tones greenish, merging into the transparent Raw Sienna tone of the shadows. For the respective half-tones prepare first a gray from the complementary colours, Terre Verte and Madder Lake; then modify with Cobalt or with Naples Yellow as may be required. These principles apply equally to oil and to water colours.

The shorter the hair of the dog, the more thoroughly the frame and its clothing of muscle must be appreciated, but smooth coats are not difficult to treat. Use the largest brushes that seem manageable—good springy red sable. Carry them over the surface to suit the rounding of the muscles and the direction of the hair; but it is important to remember that individual hairs are not seen at any distance, and there must be no attempt to produce them even if the painting is life-size.

The coats of shaggy dogs require more skill in handling. Ruskin writes the following about a dog in the Louvre, painted by Veronese: "He gives the copyist much employment. He has a dark ground behind him, which Veronese has painted first, and when it was dry, or nearly so, struck the locks of the dog's white hair over it with some half-dozen curling sweeps of his brush, right at once and for ever. Had one line or hair of them gone wrong, it would have been wrong for ever; no retouching could have mended it. The poor copyists daub in first some background and then some dog's hair, then retouch the background, then the hair; work for hours at it, expecting it to come right to-morrow—'when it is finished.' They may work for centuries at it, and they never will do it."

In attempting what Ruskin calls "sweeps of the brush," there must be no nervous idea of despatch; neither must there be uncertainty and faltering. It is much like flourishing with a pen; the best work of this kind cannot be imitated by reckless dash or by slow, laborious effort; it demands the readiness and ease that belong to a disciplined hand.

If a reasonable amount of time has been spent in using the crayon to copy the straight and curling hair that plaster models of various subjects offer, there will be little difficulty in bringing the brush to do justice to any sort of hairy coat. Do not presume that shagginess will conceal muscular development. It may on some lines, perhaps, and then, at some pretty turn, you are committed to a bit of satin-like surface that will quickly reveal any shortcoming. With the various spaniels, this is especially noticeable. There are a few dogs that hail from the Arctic regions whose bodies are rather suggestive of bags of wool, but their heads and legs may be as neat as those of their southern relations.

The hound family have short hair, and being so much given to running, their muscular symmetry is not likely to be spoiled by fat. In painting a dog life-size, the eyes should be studied as in human portraits. The colour varies greatly, and there is a peculiarity about the iris which is puzzling to those accustomed to studying the human eye only. The double set of muscles forms two distinct rings around the pupil, the outer one being the lighter. The curve of the eyelids has much to do with expression, and the tinting of the lachrymals must not be overlooked. Attend well to the delicate texture and colouring of a protruding tongue, to the jetty and coral tints about the jaws, and to the ivory teeth.

Colour Combinations. *Bloodhound.*—Gamboge and Burnt Sienna will give the light tones of the head, and with Vandyck Brown, in varying proportions, will give those of the body as well. Cobalt laid over these will give the grays where needed. For the eyes, mix Gamboge and Burnt Sienna.

Greyhound.—Vandyck Brown and Ultramarine give the strong dark tones of the body; Cobalt and Light Red, the light, delicate grays; Brown Madder and Light Red, the warm tones under the body and inside the ears.

Otter-hound.—Yellow Ochre and Burnt Sienna for the warm tones; Light Red and Ultramarine for the gray tones.

Collie Dog.—Yellow Ochre, Burnt Sienna, Vandyck Brown, Ultramarine. For the rich warm of the nose, Burnt Sienna. Ultramarine and Vandyck Brown for the general tone, more of the former being used for the cool light passages, and more of the latter for the warmer parts. For the tongue, Vermilion.

Stag-hound.—For the light-yellow variety, Yellow Ochre for the warm tones, warmed where needed with a little Burnt Sienna; Vermilion for the pink tones of the muzzle. Vandyck Brown and Ultramarine in varying proportions will give the gray tones of nostrils and head and the dark markings.

The gray tones of the darker variety may be rendered entirely with Vandyck Brown and Ultramarine.

PAINTING IN BODY (OPAQUE) COLOURS.

As the lights are not reserved as in painting in transparent colours, the tone of the paper may be left to choice. The paper may be light or dark, coloured or white. Coloured paper is often used, and the uncovered portions of it sometimes play an important part in the picture: a blue tint, for instance, will serve for the sky, and a warm gray for the sea shore. The lights are painted over the middle tints, which, as we have intimated, may be given *en masse* by the colour of the ground.

Some artists mix all colours indiscriminately with Chinese White, and go to work just as if they were painting in oil colours. To do this they must be very skilful, for the colours dry quickly, and alter much in drying.

While all transparent colours must be mixed with Chinese White or some other opaque colour, there are many colours which are naturally opaque, and it is better, as a rule, to employ these, and avoid the chalky appearance sure to follow on using too much white.

Opaque Colours.—Among the *Yellows* are Naples Yellow (which tends to blacken) and Brilliant Yellow, and in a less degree Yellow Ochre and the various shades of Cadmium. Of the *Reds*, Vermilion is the most opaque, but Light Red and Indian Red are also opaque. Of *Blues*, Cobalt, Ultramarine and Ultramarine Ash are tolerably opaque. There is *Vert Emeraude* for *Green*. The only fairly opaque *Black* is Lamp Black. It changes less in tone than India Ink when mixed with white. There is no opaque *Brown*: to get one you must use your transparent browns in full strength, or else mix them with white.

Transparent Colours.—Gamboge and all the Lakes, Madders, and Carmines, Raw and Burnt Sienna, Antwerp Blue and Prussian Blue.

The Lakes and Carmines tend to blacken, especially when mixed with white. Chinese Vermilion, which has a carmine tinge, is more durable. Mixtures of Indian Red or Purple of Cassius both give good rose tints leaning to violet.

The Chinese White should be placed on the palette n two little heaps: one well mixed with gum water, for blending with other colours; the other as it comes from the bottle or tube, to be used for high lights and white objects. It dries rapidly, especially the kind that is sold in bottles. If much use is not made of it, half of the contents of a bottle is sometimes lost by hardening. This trouble can be avoided if, every time the bottle is opened, a few drops of a solution of gum-arabic are let fall into it some minutes before using. This small quantity of liquid is sufficient to moisten and soften at least the surface of the mass, so that it can be taken up with the brush. If needed in quantity, the hard pigment must be taken out with a penknife and rubbed down with gum water on the palette.

The materials on which one may paint in opaque colours are more numerous than those that can be utilised in painting in transparent colours. Instructions for using body colour for the decoration of silk, velvet, and other textile fabrics will be found in another place (see p. 224).

THE WET AND DRY METHOD.

The combination of the wet and dry methods in water colour is distinctly an artist's process. It calls not only for practical knowledge of the water-colour art, both as to the transparent and opaque methods, but uncommon alertness in observation and rapidity of execution. The method owes its origin to the English, and its perfection to the modern Dutch school. The result is a wonderful series of technical triumphs over some of the most subtle and complex problems of graphic art. With this medium its masters may be said to have conquered the difficulties of tone, texture, luminosity and atmosphere, and, with them, the great problem of all—colour.

The Palette may be as follows:—

Blues.—Antwerp and Prussian (for skies, to be modified with white if too strong). Indigo and Ultramarine for local colour.

Browns.—Asphaltum and Brown Madder, and Burnt Umber.

Greens.—The Zinober Greens, Nos. 1, 2 and 3. Avoid all thin greens, like Hooker's Green. For exceptional use, in touches of colour or uncommon combinations, keep a supply of Emerald Green and the French *Vert Eméraude.*

Reds.—Light and Indian Red.

Siennas.—Both the Raw and Burnt.

Yellows.—Cadmium, Cadmium Orange and Pale Cadmium, and Naples Yellow. Orange Chrome is a useful yellow, but should be used very sparingly, as it turns black. Lemon Yellow makes a good green when used with Indigo and Burnt Umber.

Use no ochres, nor, indeed, any non-actinic or earth colours, like the ochres and umbers. The exception is made in favour of Burnt Umber for its general utility. The yellows for your skies, for which many artists use the heavy, non-actinic ochres, should be invariably light-giving, as with the cadmiums.

Blacks.—Charcoal Gray and Ivory Black.

White.—Chinese White.

The colours in tubes are to be preferred for three special reasons: to wit, an unlimited amount of fresh colour can be obtained without waiting to rub up a cake or pan; the colour is pliable to the brush, and can be commanded in whatever quantity desired, and there is no waste. A tin palette, divided into compartments, is most convenient. In addition to the regular water-colour brushes a few bristles are useful, especially for scumbling. A small sponge, for sponging out effects, and a basin of water are essential. For moistening your paper use any clean pan big enough to float it in flat.

The Paper, which is the first consideration, should not have a very rough surface. A stout, smooth paper, hot or cold pressed, is the most satisfactory. Let it, like all your materials and tools, be of the best.

We begin by sketching in the outline with pencil and then putting the paper to soak, which latter operation will consume from twenty minutes to half an hour.

In the meantime, get out a stretcher mounted with canvas, big enough to lay your paper on, with plenty of room around the edges. Lay it on your table, or, better still, a desk with a very slight slant to it, for then you can see your work better as you progress with it. It will be understood, of course, that in the first painting the paper must be kept in a nearly horizontal position, to prevent the colours running. When the paper is properly saturated—you can judge of that by its perfect pliability—take it out of the pan and lay it flat on the stretcher. It will flatten itself perfectly while you are sponging off the superfluous water. When you have sponged it as dry as you can, it will virtually be stretched, and stay so for an hour or two. If desired, you can prolong the period of moisture by adding a few drops of glycerine to the water. This covers the surface, and prevents rapid evaporation. Indeed, by the use of glycerine you can keep your paper moist for a week.

When the paper is stretched and sponged off, you are, let us presume, ready to go to work. The main purpose of the first painting is to get the undertone. Lay in your masses broadly, without any particular effort for detail, using big brushes, and wiping out and toning with the sponge. Keep your main purpose always in mind. Work for your general effect in tone and colour, and do not fail to apply your colours stronger than you desire them to appear, as they will dry lighter. The moisture of the paper gives them a fictitious strength. When you have carried the picture as far as you can before it begins to dry (you can tell about this by the paper rising from the canvas at the edges) cease work and allow it to dry thoroughly. In view of the comparatively limited time allowed for the laying-in, it is very necessary to have a fairly clear idea of what you wish to do when you begin. Not that you should burden your first work with reflection on future detail, but mass your picture out in your mind and it will fix itself on the paper all the easier.

When your lay-in is thoroughly dry, which will be by the next morning at latest, it is ready for future use. Do not hasten the drying by means of heat, for the colours would suffer in consequence. Let it dry naturally and soundly. Then take it in hand, sponging out, adding dry washes and sponging them over, putting in details, and, in short, carrying out the usual water-colour method. It is this combination of the two, the addition of the one to the other, that is to make your picture. You can do almost anything with a picture when it is laid-in wet, for the colour will have become part of the paper, which absorbs it damp and holds it dry. In sponging you may take a little colour off, but never disturb the fundamental basis. Practically, your first work builds your picture up, and gives you the walls of your house. What follows is merely the labour of polishing and decoration.

Do not be afraid to use body colour, either Chinese White or Naples Yellow. But they should never be used to cover up mistakes or to obtain light. Remember always that the foundation of light is your white paper, modified by the transparent colour washed over it. You cannot approach its light-giving quality by the use of body colour. Light colours are not light. They are simply pale paint, and will always be pale paint and nothing else. The proper use of body colour is for the obtaining of textures. Here it is invaluable, and in a practised hand secures most effective results. Whatever may be urged by extreme school men against the use of body colour, there is no other means of doing its work.

Take, for instance, a light sail, coming against a light sky. The one element is air, intangible, vapoury, delicate; the other is a tangible object pronounced and material. It may be of the same general quality of tint, and still must have a different quality of surface. The use of white, modified with a brighter colour, gives you this, and renders the canvas, though equal in colour and light to the sky, an entirely different object from it. The same remarks apply to house walls and other solid objects in your picture. The body colour is also useful in semi-transparent washes. In this case it should, however, be used while the paper is moist; otherwise, it will inevitably have a dry and chalky quality destructive to the juiciness and vitality of the picture.

MINIATURE PAINTING.

I. MATERIALS.

Of all processes of painting, miniature painting is the most delicate and tedious, for the work is done wholly with the point of the brush. The first essential toward excellence in it, as in fact in all kinds of painting, is thorough knowledge of drawing, without which the most beautiful colouring would be unavailing.

Miniature painting requires a specially prepared surface of either vellum or ivory. Some miniaturists use paper or Bristol-board, but unwisely, we think; for both materials are easily affected by dampness, which is the great enemy of the miniature.

Vellum.—In selecting vellum, get a piece about three-quarters of an inch larger all round than the board or metal plate you intend to strain it on. Moisten the fair side on which you intend to paint with a wet linen pad, on the other side put a piece of white paper, and on this lay the straining-plate. Then lay glue round the edges that show themselves under the plate, turn them over, and press down so as to secure the glued edges to the board. Be careful not to use too much glue, because if it oozes underneath the painting ground, that portion of the vellum will be spoiled, for the glue in drying will cause it to shrink and crackle up.

When the glued edges are dry, or before they are perfectly so, the damped vellum should be stretched in all directions, so as to cause it to lie taut on the board. You may now proceed to paint on the vellum as it is, or prepare a ground with a light wash of Chinese White.

Ivory is the material most generally used. Very thin sheets, hardly thicker than stout paper, are sold for the purpose. Great care must be taken in selecting these, as it is difficult to obtain them sufficiently free from a grained appearance—the grain shows more or less through the painting—but some ivory leaves are much more free from it than others, especially towards the centre, where the face will be painted. Let the surface of the ivory, then, be as even and smooth as possible, particularly for a fair complexion.

The colour of ivory is a great help in flesh painting, as the creamy tint is an excellent ground for a fair skin. For male subjects or brunettes a dark-tinted ivory should be chosen. Never select pieces of a whitish hue, as they look poor when painted on, unless a great deal more work is expended on them than should be necessary.

To Test the Quality of Ivory, hold it grainways to the light, then hold it up to look through, still turning it from side to side, and very narrowly observing whether or not there are streaks on it. You will easily discover them unless the ivory is freshly cut.

Having carefully selected your ivory, and ascertained that it is properly prepared for working on and quite free from scratches or saw marks on the surface, the next thing to do is to lay it down on cardboard a little larger than the piece of ivory itself.

Should you desire an oval—as for a locket or brooch—be sure to cut it out before laying it down, as the ivory is liable to split in the cutting. You must not shape the cardboard until the picture is finished, as you require a margin to fix the painting in position while at work.

Damp the cardboard a little before fixing the ivory on it; then pass some gum, not thick, over the rough side of the ivory; press down the ivory gently on the card, and keep it beneath a weight until it is thoroughly dry—say for two or three hours. It will now be ready to paint on. It is advisable to cover a small drawing board with green baize, and on this pin down firmly, with thumb tacks, the card on which the ivory is gummed. Place the drawing board on a table easel and set to work.

Colours.—It is best to use dry cake colours only; for in this form, as a rule, the pigments are purest and keep best, and as the quantity used for a miniature is infinitesimal, a single small cake of some colours may last for years. Of the more expensive kinds you need buy only a half or quarter of a cake at a time. In any case the outlay for colours at the beginning need only be trifling. It is a mistake to introduce a great variety of colours; the best effects are usually obtained by using only a few. The following list will be found sufficiently comprehensive for painting not only the head, but all accessories:

Blue Black.
Vandyck Brown.
Warm Sepia.
Raw Umber.
Raw Sienna.
Yellow Ochre.
Indian Yellow.
Pale Lemon Yellow.
Indian Red.
Brown Madder.
Extract of Madder Carmine.
Rose Madder
Scarlet Vermilion.
Indigo
Cobalt.
Ultramarine Ash
Terre Verte.

Scarlet Vermilion, like all the Vermilions, has but little permanency; but it will not be so apt to fade it the cake be kept wrapped in tissue paper when not in use, and if glazed with gum after it has been applied to the ivory. Avoid mixing it with other colours.

To the list of colours given, we must add Chinese White; that sold in bottles is best, as lead tubes are apt to discolour the pigment unless it is used up very quickly.

Gum water, an ivory palette, an eraser, a magnifying glass and some soft, clean rags will also be needed.

Gum Water.—It is well to prepare the gum water yourself, so that you may be sure of what you are using. Get a little of the very best and whitest gum arabic, reduce it to powder, and place it in a jar with some distilled water. Set the jar in a saucepan, with water about halfway up the jar; let the water boil around it until the gum is melted, and stir gently from time to time; then strain it through a piece of muslin into a wide-mouthed bottle, which should be corked up when not in use. It is a good plan to cover the cork with a piece of wash-leather, to prevent any of the cork adhering to the sides or breaking off, which would necessitate re-straining the gum, as it is essential that it should be smooth and clear. The gum water must also be very thin, or it will cause the colours used with it to crack and peel off. Some artists add a few drops of pure glycerine to counteract this tendency.

For the flesh tints two palettes are necessary - one of pigments carrying but little gum, with which to do all the first painting, and carry the portrait forward as far as possible in its masses; the other set, mixed with a greater allowance of gum, is for the finishing touches.

The Ivory Palette, although somewhat expensive, has been included in our list of requisites, and it is really a valuable accessory to the equipment of the miniaturist; for you can mix your tints on it with the knowledge that they will appear just the same when applied to the ivory panel you are working on, which would not be the case if you mixed them on the ordinary china palette.

An Eraser is needed for scraping, in case any portion of the picture should become too dark, and also to produce high lights. It should be of steel, pointed and sharp at both edges; it must be kept scrupulously clean and bright, and it is worse than useless if at all blunt.

A Magnifying Glass will be necessary, even for those with the strongest sight, for finishing up the finest parts of a miniature. It is best to have one large enough to use with both eyes at once.

Brushes must be selected with the greatest care; only three or four different sizes are really necessary, but these must be of the very best red sable. Always test a brush before buying it, by wetting it and trying the hairs on the thumb-nail; they should have a good, elastic spring in them. If they are set straight they should come to a very fine, even point; if they fail to do this, the brush is valueless.

The brushes set in quills, with rather thick cedar-wood handles, are usually the best. The hair is generally longer and of better quality than in the brushes that are fixed in metal holders; it is also less liable to come out. The only objection to quills is that they sometimes split; but with care this seldom happens.

One, at least, of your brushes should be as small as possible; but even then the body of the brush must be thick in proportion to the point, or there will be no resistance in it. For the others, sizes varying from No. 2 to No. 6 will be found the most useful.

II. THE PAINTING.

Sketch in your subject. If not over-confident of your ability as a draughtsman, take pencil and paper, and experiment with some rough outlines until you satisfy yourself as to the best pose for your sitter. This will also help you to become conversant with the features.

When satisfied with the arrangement of your model, draw in the general outlines on the ivory with a fine brush, using a light tint of either Indian Red or Burnt Sienna. Mix thoroughly with the tint a very little gum water. To insure the latter mixing well with the colours, it is well to place just a drop of it at first on the palette, using a clean brush; then dip the end of the cake of colour in clean water, and rub the colour well into the gum water, so that it will become incorporated with it. The same course must be pursued with all the colours, but great care must be exercised not to use the gum water too freely. If you wish to efface or correct your lines the colour will easily come off with the application of water and a clean brush. Always allow the surface to dry before repainting.

Make your drawing as correct as possible, and after putting in the general outlines proceed to details. The head should be placed somewhat high in the picture. Amateurs are apt to err in this respect, and do not find out their mistake until it is too late to remedy it. For painting the flesh different methods are employed in miniature painting, just as in larger work. Some artists proceed in monochrome until the drawing and proper relations of light and shade are obtained, afterward glazing in the flesh tones upon this foundation. It is, perhaps, easier to preserve a likeness by this method, but there is some risk of a sacrifice of transparency and richness of colouring. Therefore we think it preferable to work in colour from the very beginning.

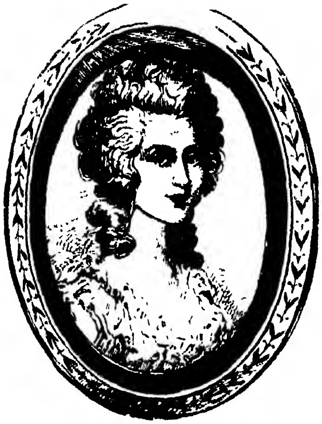

Fig. 106.

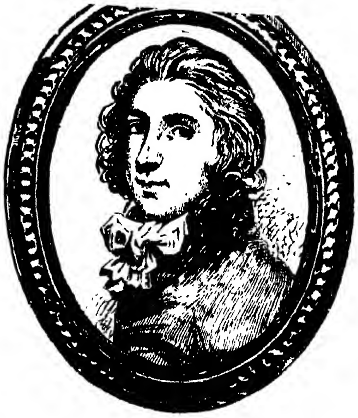

Fig. 107.

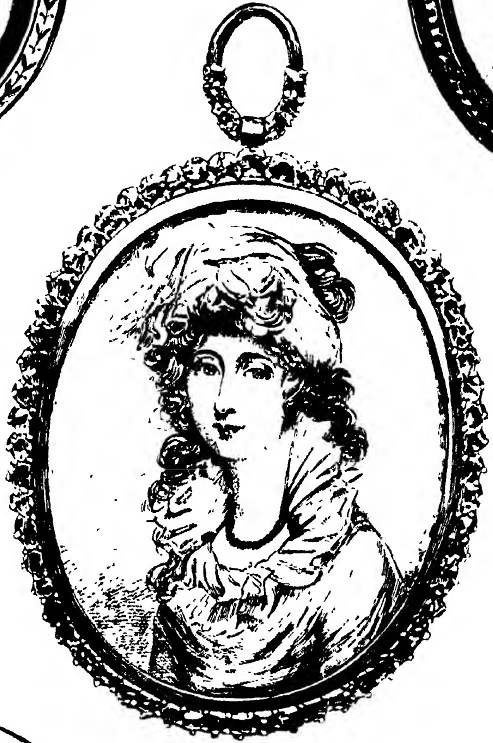

Fig. 108.

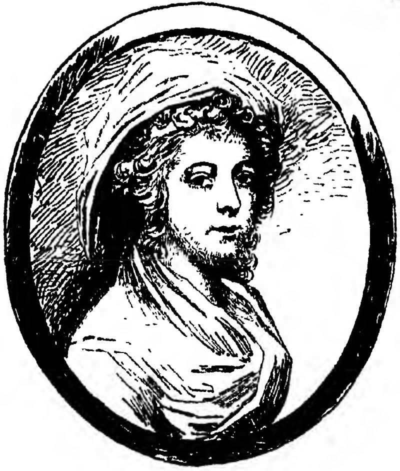

Fig. 109.

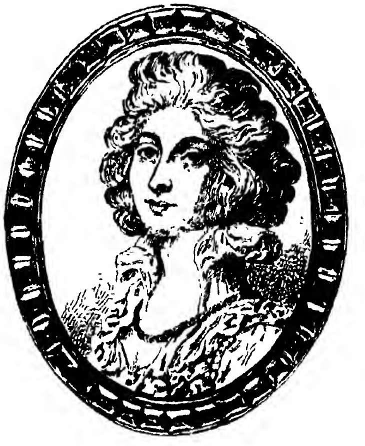

Fig. 110.

Miniature Painting. Last-Century Portraits from the Originals by Richard Cosway.

Shadows.—For the darkest shadows, which should be warm in tone, use Raw Umber with a touch of Indian Red in it. Do not be afraid to put the shadows in boldly, for as, in the first instance, your ground is all light, they will appear much darker than they really are; so there is not much fear that you will make them too strong. Block in these shadows with a certain amount of squareness and decision, paying great attention to their form, for by this means you secure the individual character of the features. Lay in the colour as much like a wash as possible, at first, as it is not necessary to trouble yourself about technique in the beginning. If, instead of trying to imitate any particular style of hatching or stippling—we will return to this matter presently—you will make it your constant aim to improve the modelling of the features, finish will come of itself, as every stroke of the brush will then tell in the right direction.

For very clear complexions, warm Sepia is, perhaps, a good substitute for Raw Umber and Indian Red. The markings of the features—such as the nostrils, the part of the face under the eyebrows, and between the lips, and the inner part of the ear—will require a somewhat richer tint. This may be obtained by adding a little Madder Carmine to the Raw Umber and Indian Red, for a dark face; Sepia, Burnt Sienna, and Rose Madder will make a better combination for these points in a fair face. In the finishing, however, a little Brown Madder will be needed in either case.

The warmest colours in the flesh are those of the lights and shadows. The latter are warmer than the former, and the intermediary, or half-tints, are cooler than either. The deep shadows are always warm; but they lose their hotness in the grays, which carry them into the lights. This rule is invariable.

The half-tones always take a cooler hue than the deep shadows. You must blend them imperceptibly with the highest lights. The half-shadows then should partake of a pearly gray. This may be made by mixing with Cobalt a touch of Vermilion. In working up these tones a little Blue Black is sometimes very useful. It is better not to use it in the first instance, but rather to unite the half-tones with the deep shadows.

For the general local tones of the flesh in the lightest parts, Scarlet Vermilion much diluted and Pale Lemon Yellow broken into it in the strong lights will be found very luminous in effect for a fair skin, with a little Rose Madder or Madder Carmine for the cheeks, the painter taking as a guide the complexion to be delineated.

For a dark face the local colouring must be modified with Yellow Ochre or Raw Sienna, according to circumstances. Ultramarine Ash gives a lovely tone for the veining of the temples and hands, and also helps to blend the high lights with the half-tones, where the transition from bright to cool tints should be most delicate.

The Eyes.—For blue eyes, Ultramarine Ash will give the required colour.

For gray eyes, add a suspicion of Indian Red.

For dark brown or hazel eyes, a variety of shades can be produced with Raw Sienna, or Burnt Sienna and Black. If much in shadow, Vandyck Brown alone is a good colour.

For the pupil of the eye, mix a rich black by combining such colours as Indigo, Brown Madder, and Burnt Sienna. Never use the cake Black to represent black; it always appears dead and flat.

The white of the eye must be tinted with a delicate bluish tone for young girls and children; for older persons the tone is yellower; Cobalt modified with Yellow Ochre gives the necessary tints. For the inner corners of the eyes a little touch of Vermilion is needed.

The Lips.—For the upper lip, which from its position is always more in shadow than the lower part of the mouth, use Indian Red and Madder Carmine; if too bright, add Raw Umber and a touch of Blue in the lighter parts. For the lower lip use Vermilion and Rose Madder.

These instructions for painting the face have been carried farther than it is advisable to follow them before blocking in the hair, which may be done as soon as the broad shadows and first markings of the features are put in.

The Hair.—It is impossible to give an exact formula for painting hair, on account of the endless variety of tints in nature; but as a general rule, it may be set forth that the lights on black or very dark brown hair partake of a blue-gray shade, while for deep shadows in dark hair, which should be warm in tone, Vandyck Brown will be found useful. The shadows can be intensified by adding Indigo and Madder Carmine, which produce the effect of a rich black.

Flaxen hair takes a cool silvery tint on the highest lights. The shadows should be a little greenish—such a tone as can be produced by mixing Cobalt with Raw Umber.

It may be helpful to remember that the actual local colour, whatever it may be, is represented by the general mass between the high lights and the half-shadows, and here the exact colouring of nature should be followed as closely as possible. The half-shadows alternate between warm and cool tones, according to the reflections thrown on them from the light or dark masses, and must be carefully studied. In the first instance, however, block in the light and the shade as broadly as possible.

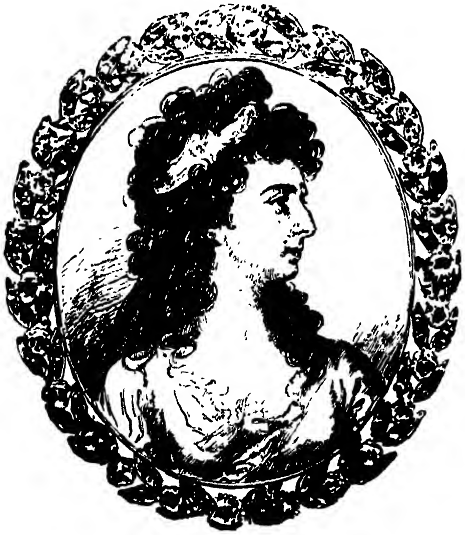

FIG. 111.—MINIATURE BY RICHARD COSWAY.

The background, and as much of the dress as may be visible, must next be attended to, so that the whole surface of the picture shall be covered before proceeding further. In this way a just balance can be preserved, which would be lost if any one part of the work were carried much in advance of the rest.

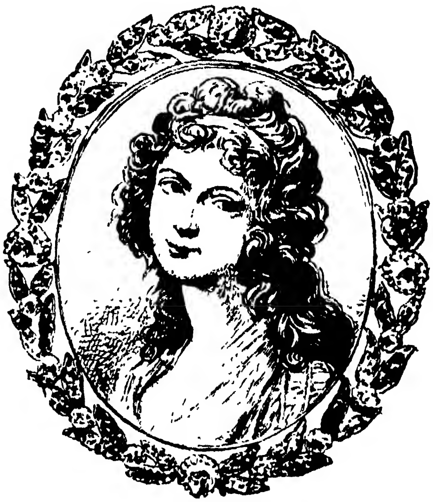

FIG. 112. MINIATURE BY RICHARD COSWAY.

Having brought your painting so far, examine it carefully with a view to any necessary corrections. At this stage it should not present a smooth and even surface; this must be afterward attained by means of the delicate hatching or stippling necessary for blending and incorporating the tints one with another.

Hatching and Stippling.—In hatching, fine, short and firm strokes are made with the brush, following as nearly as possible the form of the features; the strokes being, for instance, somewhat horizontal in the modelling of the forehead and somewhat curved or circular in following the contour of the mouth or eyes.

In stippling, the modelling is done in dots made with the point of the brush. Sometimes stippling and hatching are employed on the same picture. If you will get an old-fashioned miniature and study it, you will understand better what is meant by these terms than by any explanation of them.

PHOTOGRAPH PAINTING IN WATER COLOURS.

PAINTING photographs calls for a skilful hand and practical knowledge of colour. The hand must have been trained to be equal to whatever demands may be made upon it—not only in applying colour, but in restoring drawing. The camera has done its work, but you will quickly and irretrievably undo it if you begin to colour over it without the ability to follow unswervingly every line and shade of the duplicate photograph, which should be before you—just at the left—for constant reference.

The photograph that you are to paint must be good in the ordinary sense, with an effective distribution of light and shade. Select a light impression, for pure warm colour should have no inky shadows under it. Yet the impression must not be so light that the half-tones are lost. A somewhat darker impression is needed for the duplicate copy.

There should be little shade in the background of the picture, for upon dark shade you can only produce certain effects; without it you have freer scope.

The slightly albumenised paper which is now used for photographs does not need any of the preparations that are sold " to make the surface receive the colour."

First wet the photograph, background and all, evenly over with clear water, using a large sable brush in the same manner that you would use it if it were charged with colour for a wash—just as carefully, for you do not want to soak one part and slight another. If the surface has taken the water at all as an oily surface would, prepare a little thin gum-arabic water—so thin that it will pour like clear water—and stir one drop of ox-gall in each tablespoonful to be used with the colours.

The Colours.—Working on the perfectly smooth surface of a photograph is very different from working on rough water-colour paper, and the colours must be in faultless condition. The pans of moist colour, if they are not used rapidly, but left to dry and crack after being made wet, become much deteriorated. If these are employed, a little should be taken out with the point of a knife and wetted upon a palette, instead of being taken off with a wet brush as for ordinary painting.

It is better to use hard cake colours, and rub them off from time to time, as they are wanted. Never dip the cake in water, but have just enough water on the palette to facilitate the rubbing off. If the mixture of gum-water and ox-gall is to be used it may be added afterward.

The colours needed will be:

Red Lead.
Rose Madder.
Crimson Lake.
Vermilion.
Indian Red.
Cobalt.
Indigo.
Prussian or Antwerp Blue.
Chinese White.
Naples Yellow.
Gamboge.
Cadmium.
Indian Yellow
Raw Sienna.
Raw Umber.
Vandyck Brown.
Sepia.
Ivory Black.

The brushes should be the same as those used for miniature painting.

The Flesh.—First, a very thin wash of Red Lead is to be passed over all the flesh—this must be just sufficient to give a warm, flesh-like tone, without really seeming to colour. When the wash is dry, it must be repeated where local colour is wanted. (Red Lead is not made in moist colours; the nearest equivalent to it is a mixture of Naples Yellow and Rose Madder.)

Mix Cobalt and Naples Yellow in such proportions as to give a greenish, rather than a bluish, tint, and, with this, work in all the half-tones very delicately by means of stippling or hatching, whichever touch you are most skilful with. In either case, make the work suit the modelling of the surface, not only as to direction and curve, but where there is any foreshortening crowd the touches up smaller, and where there is none make them free and open. If the brush ever leaves an unfortunate trace, apply a corner or edge of a piece of blotting-paper. Texture, gradation, the rounding of surfaces, all depend greatly upon the judicious treatment of half-tones.

Now lay in the warmest tints required, with

Rose Madder. They will be as follows: —The line between the lips, the nostrils, the inner corners of the eyes, the concave portions of the ears, and, if the hands are seen, between the fingers, and where there is any glimpse of the inside of a hand.

Next, begin on the darkest shadows with Vandyck Brown, and as you approach the half-tones already worked in, use Indian Yellow and Indian Red mixed in such proportions that they will shade from the Vandyck Brown into a lighter tint.

The Mouth.—Touch the lower lip with Red Lead and Rose Madder, and the upper lip with the light shade tint made of Indian Red and Indian Yellow.

The Eyes.—Whatever may be the colour of the eyes, do not make it too decided. Cobalt may be modified with Naples Yellow for light blue eyes and with Sepia for dark. Raw Sienna and Vandyck Brown make a good hazel, and a little Vandyck Brown should be used in the blackest eyes; Sepia is usually strong enough to combine with it, without any black. The pupil wants Sepia alone or Sepia and black. Let the high lights be spared and afterward touched with Chinese White if they are to be sharp. A little Cobalt or a little Neutral Tint is needed on the white of the eyes. Be careful not to make hard lines for the eyebrows or lashes. The latter are usually somewhat darker than the former. Both, if belonging to adults, correspond nearly with the hair. Children's lashes are usually darker than their hair.

The Hair.—The local colour of the hair is not likely to be mistaken. Try the colour that seems to be indicated, on a piece of common paper, and it will be very easy to decide if it is right. The lights, shadows, and half-tones are more difficult. The neutral tint of the latter is greenish if there is much yellow in the hair, purplish if there is much warm brown or red, and bluish if the hair is black. Make the darkest shadows as warm as the local colour will allow, and slightly cool the edges. The lights on black hair must be very cold. Wherever the hair is brought on the face use neutral tint freely to insure softness of outline. Keep the hair well massed and free from hardness. When the photograph gives a good light on the hair, always depend upon sparing it and modifying it with a suitable tint rather than upon using Chinese White.

Colour drapery effectively, but not crudely. Use transparent washes that will preserve every fold and every shade that the camera has given. Lay each portion on with a tolerably full brush, bringing it just as far as it ought to come, and no farther. Keep shadows warm, merely cooling the edges. For instance, the shadows in blue drapery tend somewhat toward purple or even brown, which means that they borrow warmth from red. On the same principle, the shadows on yellow want Raw Sienna and Warm Sepia, and those on orange, Burnt Sienna and Rose Madder. Scarlet and crimson drapery want the richest browns and purple in the deep shadows. The most brilliant portions of scarlet should first be washed with Cadmium and then with Vermilion.

On silk and satin, the effects must be transparent and brilliant; on velvet, soft and broad; on cloth, soft and more opaque. A little Chinese White may be used in the local colour for cloth, to give it more body. In treating any black fabrics, do not depend too much upon black; warm the shadows with Sepia and Crimson Lake and cool the half-tints and the lights with Indigo.

White drapery should have Cobalt and Indian Red on the medium shades, and Sepia on the deepest shades. It is often necessary to give more shade to white than you find on the photograph, and the half-tones should be brought well up to the lights.

The Background must, of course, depend upon the style of the picture. A clouded background usually looks well for any picture that is not full length, whatever the size may be. Neutral shades alone may be used, or, if the subject be fair, light cobalt and violet may be forced in. For very dark subjects olive tints are good, with Lake and Sepia introduced toward the lower part of the picture. After using the washes desired, a fine finish may be given with broad hatching. A red sable brush somewhat worn at the point will give the broken atmosphere effect that is wanted.

In connection with the present subject the reader should study carefully not only the directions for Miniature Painting, but also the articles on Portrait Painting, both in oil and in water colours.

PAINTING IN PASTEL.

I. INTRODUCTORY.

PASTELS are really coloured crayons made by mixing finely ground coloured chalk with a solution of gum tragacanth and a little candied sugar, which is added when the paste requires a slight degree of agglutination. The title, "*Painting* in Pastel," may, therefore, seem a misnomer. But any one who has watched an *artist* use these friable little sticks of dry colour, combining and manipulating them, and has also seen at first-class picture exhibitions the results attained by the use of this medium, will not be inclined to dispute the assertion that they have much more to do with colour than mere drawing in coloured crayons could possibly have. Pastel, in fact, is the art of dry painting, if the expression may be allowed.

In many respects pastel is an ideal medium. You may get charming effects in a very short time; there are no brushes to wash or colours to mix, and when you are tired, the work can be put on one side without fear that it will dry in or not dry enough—it is always ready to take up just where one has left off. Out of doors you can work in all weathers—wind and dust do not affect you; you need neither water nor any liquid medium. With the single exception of flower subjects, probably there is no branch of easel painting that cannot be as successfully accomplished in pastels as it could be in either oil or water colours. Flowers are undoubtedly better in the latter: you cannot obtain the clear brilliancy and pure texture they require quite so well in any other medium. Fruit, on the other hand, is peculiarly susceptible to effective treatment by the pastel medium. For certain effects of artificial lighting, pastels have a special power—in rendering the diffused glow of firelight, for instance—but you cannot obtain the deeper blacks and the richest, darkest shadows that are so easily obtainable with oil colours. Some artists have employed both oil and water colours in juxtaposition with pastels in the same picture, but the practice is not to be commended.

Permanency.—There has been a prejudice against pastels, owing partly, no doubt, to the impossibility of "fixing" them without sacrificing much of their brilliancy and delicacy; but, under glass and hung upon a dry wall, examples of work done fully a century and a half ago prove that pastels are not necessarily perishable. Portraits by Chardin and La Tour, in the Louvre, although dating from the time of Louis XV., are quite unchanged in colour.

The Use of Glass, which is absolutely necessary, should limit the size of a picture in pastel. Life-size portraits in pastel are not uncommon, but the practice of using the medium in this way seems to us to be a mistake. The great weight of so large a sheet of glass as a picture seven feet high must needs have is in itself a formidable obstacle; for, besides the difficulty of transport, the danger of breakage and consequent damage to the picture, when glass of this size is used, is very much increased. Against the drawback that the difficulty, if not impossibility, of fixing presents may be set the permanence in colour.

Stumping.—As to the use of the stump, we would remark that it is a dangerous tool in the hand of the artist—how much more, then, in the hand of the novice! Stumping is almost certain to result in what is called "dirty colour." All the rubbing necessary may be done with the fingers, and they even should be employed *only* when necessary. Of course, *great* artists may do as they like in such matters.

There are no pastel pictures in our National Gallery; but at the Louvre you may see charming examples of both methods. La Tour's work is all done with the stump, and while all the pictures are excellently well drawn and modelled, and the textures (especially some steel armour in one portrait) are remarkably reproduced, still the work lacks the vigour and "snap" of Chardin's, which is frankly put on with the pure pastel, the modelling being done entirely by strokes of the crayon in the direction of the form. The pictures of Prud'homme, too, are done without the aid of a stump; he used a coarse canvas, and laid his colour on in flat masses, yet his work is all well modelled, without really, in the other sense of the term, being modelled at all.

If you wish to experiment with the stump, the best thing to use to work upon is pastel canvas; even the velvet pastel board has not tooth enough to admit of much working over with the stump. Cartridge paper is out of the question for a novice. Rubbing would be sure to make the colour look "woolly."

II. MATERIALS.

For a beginner velvet pastel board perhaps is the best material to work on. It is sold in sheets of various sizes. It is economical to buy the largest, and cut them to suit. There is also pastel canvas, which can be bought by the yard or on stretchers, like ordinary canvas for oil painting. This has the surface best suited for portraits, for the texture is not spoiled by rubbing or by making alterations. It is not advisable to use pastel paper; it must be stretched in order to be framed, and this usually destroys the delicate tones on the surface. Cartridge paper only affords artistic effects when very skilfully used. It will not stand rubbing; the colour must be put on directly in the proper place, and the paper itself gives a very agreeable background. It can be procured in tints suitable for any desired effect.

The Colours.—Get as large a box of pastels as you can afford; you will find a use for every tint, no matter how many you have. This is especially true in painting portraits. If, however, you intend to confine yourself to landscape, you will need greens of all kinds—yellow greens, emerald greens, and, above all, those delightful gray greens which are made in pastel. Then you want some blue—and be careful to see that your sky blue is not purplish—white (warm and cool); some browns, reds, a little purple, yellows, and as many grays as you can afford. Have many soft crayons, some hard ones (the same colours as the soft) for outlines and getting into small places, and for backgrounds (especially for portraits) some large, extra soft crayons.

Study well the box of colours; train yourself to know just where the crayon representing each tone lies, and always put it back in the same place. Keep the box tidy; the colours will last twice the time they otherwise would, and you will be saved much trouble, for they soon become gray on the outside from handling, and so get to look exactly alike. Wipe them occasionally on a clean cloth or piece of cotton.

On first looking at a new box of pastels it seems as if many of the colours were repeated, they look so nearly the same. Only personal experimenting will show that, when laid on the canvas, there is a perceptible difference between the shades that look so much alike.

III. PORTRAITURE.

It is best to paint portraits on pastel canvas. Get that with the surface like that of your velvet pastel board. Sixteen by twenty is a good size for a head.

A light background is preferable to a dark one; but in selecting, great care should be taken to get a tone that will bring out to the greatest advantage the colour in the head. Green grays look well behind many heads, but no rule can be laid down. Your own taste and judgment must guide you.

After you have decided on your background and posed your sitter, draw in the head carefully and deliberately with hard crayon. If you make a mistake—and in all probability you will—you can erase with a fine, stiff hat-brush (the kind used for silk hats).

In painting your background use the flat side of the crayon, and make the strokes from the top toward the bottom of the canvas. You may have to put several colours over each other to get the right tone; then rub them together, always downward, with your fingers. After getting your background make a note of the lights on the face, also of the shadows; then note the dress, in order to get your values true.

In painting the face, keep the light side as one simple mass, and the shadow as another. For the light you will require pinks and yellows over each other in innumerable combinations, according to the complexion of your sitter. For a brunette, putting the deepest Orange Cadmium under the other tints gives the required effect. In the reflected light on the cheek, and sometimes on the neck, you will need light blue or green. For the shadow side use Burnt Sienna, grays, and sometimes a touch of Vermilion. You can often drag the colour from the background with your finger over the shadow; this softens the edge and helps to make the head round.

For the mouth and around the eyes, and for all other places where it is essential to keep the drawing accurate, use hard crayons and work slowly and cautiously.

In painting the hair, keep the masses simple. In dark hair the shadows are full of colour, and reds and blues are necessary in painting the lights. Do not rub too much; you need to soften the hair so that it looks loose and fluffy, but you must not forget that there is a skull underneath. Let the head cut sharply against the background in some places; do not blend it all around.

Paint the dress and all other accessories with reference to the head, bearing in mind that it is the most important thing. If you are painting a portrait of a gentleman, do not have his white shirt more prominent than the head. Charming pictures can be made of women's portraits. The dresses now in vogue are generally graceful, and the loose chiffon or lace ruffles around the neck are becoming as well as artistic. These should be painted with a dainty touch.

IV. FLOWERS.

A light-coloured background is almost invariably the most desirable; often the pastel board itself is an agreeable and effective one.

Place your flowers in a glass jar or a graceful vase. Paint the flowers first, for they may soon wither. Draw them in carefully with as nearly the right local colour as possible—for you are drawing and painting at the same time—and remember that, at first, drawing is putting dark where dark is—in the direction in which it goes and in comparison with other darks. For example, in drawing in a bunch of sweet peas, draw the white ones with white, the red with red, etc., and indicate your shadows and relative values. This completed, paint as directly as possible what you see, remembering that working over the same spot too often spoils the texture of your paper, and hence loses to you that crispness and brilliancy of colour you are trying to get. Use the flat side of your crayon whenever you can. In the shadows it is well in most cases to put on strong colour first, and then drag the grays over, rubbing them together a little with the finger; but the lights should not be touched after once laid on.

Glass is very effective painted in pastel, and it is easy to represent. Look carefully at your high light; decide whether it is warm or cool; pick out that tone and put it on your paper. Then compare all other lights and shadows with it. The green leaves under the glass will become gray, and as you have an assortment of gray greens in your box, you have only to select and place them on your board, adding here and there a trifle of red or blue, as may be required.

Wild flowers, painted out of doors, with cartridge paper for a background, can be made very effective and artistic.

A good flower study in pastel would be three Maréchal Neil roses in a tall cut glass, with a pale yellow silk background. The gray greens used in the leaves which show under the glass are repeated in the shadows of the background. You will find that, in the shadows on the roses, Orange Cadmium can be put on over the gray to give brilliancy. In the background the pastel board can be allowed to show through with advantage. Paint the shadows first with gray; add a little Cadmium, and finally, over the whole, a light purplish gray; then delicately touch in the lights, leaving your board for the half-tone.

Another good study would be a green-blue plush background, and a low silver dish with two pink roses. Make the lights on the plush by using the flat side of your crayon; put them on sharply, and do not touch them again. Work into your shadows all the grays, greens, and blues that you see. In painting the roses, in places, you will need to put a Pale Cadmium or Lemon Yellow colour over your pale pink, and, where the leaves curl over in going from the light to the shadow, you may need a little touch of pure red.

In the silver bowl you will find all the colours of your plush and some of the colour of your roses reflected, so paint it just as you see it, putting on your high light firmly and sharply.

V. LANDSCAPE.

There are two drawbacks to painting out of doors with pastel--the weight of the box of colours and the difficulty of carrying studies without injuring them. The first is in a measure obviated by dispensing with an easel, for you can hold your board on your lap; and you may do without an umbrella, as the sunlight does not annoy you as it does when working in oil.

As to the difficulty of carrying studies, we make the following suggestion :- -Put a layer of wax paper over each one, and then tie your package of sketches firmly together with a strong string, so that they will not slip. In this way they can be carried for months without injury. Studies made on charcoal paper can be put in a portfolio with layers of wax paper between, without in the least injuring them. Pictures done on pastel canvas are the most difficult to move about from place to place, as every jar will be likely to knock off some of the colour.

There is no medium better fitted than pastel to catch the fleeting effects of sunshine, of moonlight, of sunset, of fog or mist. Gray days, twilights, and sunsets are especially suitable for treatment in this medium, which is also well suited to the representation of rocks and surf.

As with your flowers, sketch in only as much outline as you absolutely need, and do it with the crayon. A very soft lead pencil is also useful to draw in masts and bowsprits of boats, and all lines too fine to be drawn with the crayon.

In beginning, select as simple a subject as possible—an old gateway and a bit of road; a few rocks jutting against the sky; a stone-wall and a few bushes. Put in your sky, and try not to touch it again. You will find just the right blues in your box, and grays of all tones for clouds.

Everything in the strong sunlight is full of colour—even the shadows. In painting the shadow across a reddish road, put on bright purple first, over that a brown (Burnt Sienna), then a lighter gray, and lastly the local colour —without rubbing until the last colour has been laid on and produced the desired effect. Again, in painting a black fish net on which the sun is shining, the shadow may be made by putting on purple, then crimson, then dark blue, and lastly, and very delicately, black. In the same way much colour may be used under the final gray in all shadows of trees, rocks, and so forth. The light in all cases should be put on as directly as possible. If you have not the exact tone you need, placing one colour over another will give the effect. For instance, you want a purplish gray, and you have only blue gray; then put your purple on first— or red, if you have no purple and work the gray over, either in strokes or by rubbing.

In painting distant hills, put on a purple gray that has the right value, and then work in delicately the greens, reds, and blues as they happen to come.

Avoid monotony of greens in the foreground by using the different light greens in your box, and sometimes have them overlap each other. Then, for strong sunlight work in a yellow (Light Cadmium) over the greens. A light shade of the Emerald Green, with a Light Cadmium over, produces a very brilliant effect.

In rocks, especially in the foreground, you will notice an infinite variety of reds, blues, purples, and grays. Put them all down in their proper places, and then, lightly over the top, put on the gray. This will give the effect of being one solid mass, and not a number of disjointed pieces. Be careful that your rocks blend with the background in some places, and cut sharply in others, as this is the characteristic feature of rocks. The blending can always be done by rubbing your finger along the edges.

On gray days you will need more of your gray greens, and less, or perhaps none, of your yellows.

In painting a sunset, you will observe that all objects against the brilliant sky become dark, not black. Work as rapidly as you can, putting on your colour where it is needed, and making notes of the objects in the foreground.

VI. PHOTOGRAPH COLOURING.

For colouring in pastel, as well as for finishing in crayon, a solar print is most easy to draw over, perhaps, if made on "O.W." or Whatman double-elephant drawing paper, although any kind of paper with a somewhat rough surface, which will present a tooth to the chalk, will answer the purpose. The print should be mounted on a stretcher covered with canvas. Should the surface, on trial, fail to "bite" sufficiently, it may be rubbed with pumice-stone powder, or cuttle-fish powder, until a suitable surface is obtained, care being taken, however, to avoid obliterating any portion of the picture.

Begin with the shadows of the face, strengthening them with a warm tint, and so work upward. Apply the colour in bold touches, the respective tints being laid on roughly side by side, or slightly overlapping each other. When the whole is well covered, the tints which lie crudely side by side may be blended with the thumb, or in more delicate parts by a stump. Let it be borne in mind, however, that the less of this softening work there is required, the better, as much of it inevitably destroys the freshness and brilliancy of the colour, and imparts a feeble, woolly look to the work. The tints used for the face, etc., will be similar to those which would be required for the same subject in water- or oil-colour printing, with the difference that they are ready made and need no mixing. If a tint requires modifying, it may be done by the employment of two crayons. If a gray, for instance, be too cold, it may, after it is applied, be hatched over with a red, and the two blended, and so on. After the face is coloured, and the colour blended, great brilliancy and transparency may be obtained by hatching over the features with the tints of the same scale, but in a higher key. Warmth or coolness may be imparted in this manner; and these delicate yet brilliant hatchings may be left without softening. The hair and draperies will be treated in the same manner, the former being rather indicated in masses than by any attempt to define individual hairs, which would give a hard, wiry effect. The background may be rubbed in with the thumb.

PAINTING IN OIL COLOURS.

TOOLS, MATERIALS, AND PROCESSES.

ALTHOUGH the paraphernalia of the painter in oil is more imposing than the simple outfit of the water-colourist, the technique of the former is more simple than that for any other method of painting, if we except pastel—which many persons will not consider painting at all.

In point of depth and durability oil painting has decided advantages over water colour. The colours, moreover, do not change in drying, and correction and repainting in parts are possible during any stage of the work.

It is the property of *the vehicle* only which gives Depth to the painting in oil colours and distinguishes it from the painting in water colours. Yet so seemingly simple a technical difference involves considerable change in the equipment of the artist. With only water for a vehicle, a box of moist colours, and paper to paint on, the aquarellist has little occasion to concern himself about tools and materials; but the equipment of the painter in oil colours involves the consideration of many details about paints, brushes, special vehicles, and varnishes.

The Colours needed are for the most part those already described under WATER-COLOUR PAINTING; but instead of using them moist in pans, you may buy them ground with oil and put up in collapsible tin tubes. In this way they keep fresh for a long while, and if any of them do become dry while in use, they can be cut out of the tubes and reground with a little oil of turpentine. Do not put on your palette more colour than you need. If you find that you have done so, transfer the paints to a china slab or a piece of glass, and keep them under water until you want them again.

In addition to what has been said as to the characteristics of various pigments under WATER-COLOUR PAINTING (p. 63), we should mention the following with special reference to their use in oil painting.

Naples Yellow is durable and safe if it is not mixed with a steel palette knife, which may turn it black, it being a compound of oxides of lead and antimony.

Chromes are sold in three tints, *Pale, Deep, Orange* (opaque). They are valuable in rapid sketching, but they should be avoided so far as possible in finished work, for they are apt to turn black. Used with caution, though, they are tolerably safe. For a rising moon, for instance, it is said to be quite safe and very satisfactory to paint with Deep Chrome over solid white already dry.

Cadmiums are made in four shades, *Lemon, Pale, Deep,* and *Orange* (opaque) tints. They are more permanent than the chromes, especially when mixed with white.

Zinober Green is made in three shades, *Light, Medium,* and *Dark.* It is a mixture of Chrome Yellow and Prussian Blue, and therefore not permanent. The dark shade is very deep and bluish.

Venetian Red (semi-opaque) is purer and brighter than Light Red, although with less power. It is just as permanent.

Indian Red has a purple russet tone, and gives pure, laky tints. It is opaque, permanent, and a good dryer.

Bone Brown is a very deep, rich brown, but is a slow dryer and is not very permanent.

Asphaltum is a powerful and fascinating brown. But we only mention it in order to warn the reader against it. It is a rapid dryer and if used pure it cracks and peels away from the other colours. Sometimes it is mixed with chromes or ochres and it so makes a powerful olive green. *Bitumen* and *Mummy Brown* (very slow dryers) are of the same treacherous family, and should be avoided altogether, despite their attractive transparent qualities.

Blue Black has very little body, but it is clear and velvety and very permanent. It is made by burning grape-vine twigs to charcoal. (It is used also in water colour.)

"*Qualified with a little Ivory Black*" is an expression that will be frequently used in our suggestions for painting in oil, and we may as well explain here what is meant by it. Ivory Black is used to tone colours which would be crude without it. Most of the best French painters use it in a very careful way, mixed with Silver White and other colours to produce the charming grays seen both in landscape and figure painting. Blue Black is cold in quality for flesh, though useful at times; but Ivory Black is the painter's standby to give the tone and quality to colours which otherwise would be crude and harsh. It should always be modified with either White, Yellow Ochre, and perhaps a little red, blue, etc.

The Palette illustrated on page 137 is beautiful in outline, and (in relation to the hand supporting it) suggests the most convenient size; but an oval palette will not fit into the colour-box as easily as a rectangular one. Mahogany is considered the best material for the palette. Rub linseed oil into the grain of the wood to season it. If you also do this regularly after using the palette, the surface will soon get hard with a texture very pleasant to work on. Be sure to clean the palette thoroughly at the close of each day's work.

The Palette Knife has a thin and flexible blade, with which you mix and arrange the tints on the palette. It is often used instead of the brush to lay on a flat mass of colour.

The Palette Cup, either single or double, is attached to the palette, as shown in the illustration. It is used to hold oil, or whatever medium you are using.

The Easel supports the canvas while you are painting. It is usually triangular, and has movable pegs for the adjustment of the height of the work. In choosing an easel, see that it rests firmly on the floor.

The Mahl-Stick is a slender stick, which the painter holds by its lower end in the left hand and uses to steady the right hand while painting details. There is a padded ball at the upper end so that it may rest on the canvas without denting it. A mahl-stick should not be necessary to any person with fairly good nerves.

Canvas for painting is sold in rolls of six yards, varying in width from 27 to 86 inches. The various textures are known as Smooth, Roman, and Twill. The Smooth is used chiefly for flower pieces, and landscape and marine pictures; the Roman and Twill, which are coarser, chiefly for portrait painting. It is best to buy canvas ready mounted on stretchers fitted with keys, or wedges, by means of which it can be tightened if it sags. Never use a canvas more than two feet square without a brace piece at the back; otherwise your picture will probably suffer from the warping of the stretcher.

Oil Sketching Paper is a cheap, portable, and in every way a convenient substitute for canvas. It is covered with several coats of oil colour, and is very pleasant to work on. It may be bought made up into solid sketch blocks like water-colour paper. Work on oil sketching paper may eventually be mounted on a stretcher, like canvas.

Academy Boards are stiff enough to need no support. There are two kinds—the smooth and the rough. The colours are apt to crack on the former, which, moreover, is somewhat greasy; and the latter soon wears out brushes. Priming, however, overcomes the chief objections to the smooth board. Prime with Silver White, Yellow Ochre, Burnt Sienna, and a little Ivory Black, mixed with turpentine. Lay this on with a flat bristle brush. When it is dry, rub down the surface with fine sandpaper, slightly damped with water. Before priming, be careful to dust off the white powder which is often left on the board from the packing.

Birchmore Boards, with primed canvas surface, are much more used now than Academy Boards.

American Whitewood, or "Bass-wood" Panels, are excellent for landscape sketching.

Brushes.—Flat hog's hair bristle brushes are best for large work; round brushes, or small flat bristles (measuring from a quarter of an inch to three-quarters across), for a medium-sized canvas, and red sable brushes for details (see illustration). A brush not shown in our "sheaf"—as painters call a handful of brushes—is the blender, also significantly called the "softener" or "sweetener." It is made of badger's hair, and spreads out like a dusting-brush or shaving-brush. It is used to blend the wet colours, and is chiefly responsible for the "woolliness" which marks the work of many amateurs. In the hand of an artist of experience it is a valuable tool; but the less the beginner has to do with it the better.

To Clean Brushes.—Do not clean any brushes with turpentine; it takes the life out of the hair. For bristle brushes use lukewarm soap-and-water. For sables use sweet-oil, which moistens the hair and preserves it. Dip the brush in oil, and wipe out the paint with a cloth. The blender should be cleaned with soap-and-water, but must not be left in it, for the hairs are glued and will come out.

Oils.– *Turpentine* is used for thinning the colours. It is a quick dryer, and is often used in preference to

Poppy Oil, the lightest-coloured and most useful oil, but it takes about two days to dry.

Boiled Linseed Oil is much used, but it does not keep its colour as well as Poppy Oil. In good condition it is transparent, limpid, and very pale amber coloured ; it takes about a day to dry.

Linseed Oil is excellent for cleaning brushes when painting. Moisten your brush in it often.

Drying Oil is employed to hasten the drying of those colours which do not naturally dry well. It is prepared by boiling linseed oil with certain oxides and salts of lead.

Vehicles, or Mediums.—There have always been differences of opinion in regard to the use of mediums in oil painting. Many painters hold that without the lavish use of some suitable vehicle it is impossible to keep their colours under control while flowing freely from the brush; others hold that the use of any medium whatever is undesirable—that the use of megilp destroys the suggestion of texture, and gives to a painting a tame and oily look. No doubt very many works of art have been destroyed by the too free use of megilps,[1] as these gelatinous compounds of oil and varnish are called; but, on the other hand, there are many subjects suitable for representation on canvas which could not be rendered properly with paints of the ordinary consistency, and there are certain phases of artistic inspiration which could not find expression through the tedious pigment-spreading process, necessary to the covering of a canvas with colour used just as it comes from the tube.

Copal Varnish, another vehicle, dries too quickly to be easily managed by a novice. It may be diluted with drying oil or turpentine, but it does not work so satisfactorily as oil alone or oil mixed with varnish.

Mastic Varnish (gum mastic dissolved in turpentine) is perfectly clear, and looks almost like water. It is used in various kinds of vehicles.

The Safest Medium perhaps is one-fifth part of *Siccatif de Courtray* (an excellent dryer) to four-fifths of poppy oil or boiled linseed oil. This, however, in any case, would not be needed until after the first painting, for which turpentine only is required to thin and dry the colours. It is best to avoid using any medium if you can do without it. If your colours are thicker than they should be to allow the brush to travel easily over the canvas, add linseed or poppy oil, or you may use a mixture of half turpentine and half oil.

Siccatif de Harlem, another dryer, is much darker than *Siccatif de Courtray*. It is dangerous because of the tendency to dry, only the surface of the paint forming a film, which cracks in the course of time.

All the siccatives are mixtures of sugar of lead (a deadly poison), linseed oil, turpentine, and copal varnish.

French Retouching Varnish, a very thin solution of gum copal in alcohol, is very useful when applied between the progressive paintings of a picture, to bring up the colours that have sunk into the canvas, and it prepares the surface for retouching to any extent. It dries almost immediately.

Oiling Out is the process by which the artist ensures the uniting of the subsequent with the previous painting stage of his picture. It consists simply of spreading a thin coat of oil or varnish over the colours already laid. Poppy Oil or French Retouching Varnish is the best thing to use for the purpose.

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[1] The *Megilp* most generally used consists of equal parts of drying oils and mastic varnish. The mixture is lightly stirred, and then allowed to stand until it settles into a thin and transparent amber-coloured jelly, in which state it is lifted on to the palette with the palette knife.

Varnishing is the final operation in painting, giving a resinous, transparent glaze, intended to protect the picture from injury and decay. *Mastic Varnish* is generally used for the purpose. Some artists varnish with *Copal*, but it is liable to crack and injure the painting. Both varnishes, as has already been remarked, are used in vehicles. *French Retouching Varnish* is entirely safe, and dries with hardly any gloss; but it is used only temporarily, for within a year it will need renewing. Usually, then, the painting is permanently varnished with a coat of mastic.

Dead-colouring is the first or preliminary painting. In some cases it carries the colouring pretty far toward the ultimate intention of the artist. In others it is little more than priming.

Glazing and Scumbling have been dealt with generally under WATER-COLOUR PAINTING, but the operations in oil painting call for special description.

Glazing is done by mixing a transparent pigment with a medium of oil or varnish, and then applying it with a brush over some passage already painted in opaque colours. The operation often gives much greater brilliancy to the hues of flowers, especially of deep red flowers like the Poppy and the Jacqueminot Rose, than could be obtained by solid painting exclusively. Glazing, however, in landscape particularly, takes away from the effect of distance. It should, therefore, rarely be used in skies, mountains, and distances; but for foregrounds, especially for foliage, it is very valuable, and also in giving the depth of the dark hollows under foliage, and the transparence of still water.

Scumbling, as has been explained already, helps to give the effect of atmosphere, and is particularly valuable for skies and distances. But in this delicate operation of painting in opaque colours over a passage already painted, you must lay the colour so thin as to be semi-transparent; otherwise you will produce opacity. In rough parts of a picture that need scumbling the paint should first be scraped down with the palette knife.

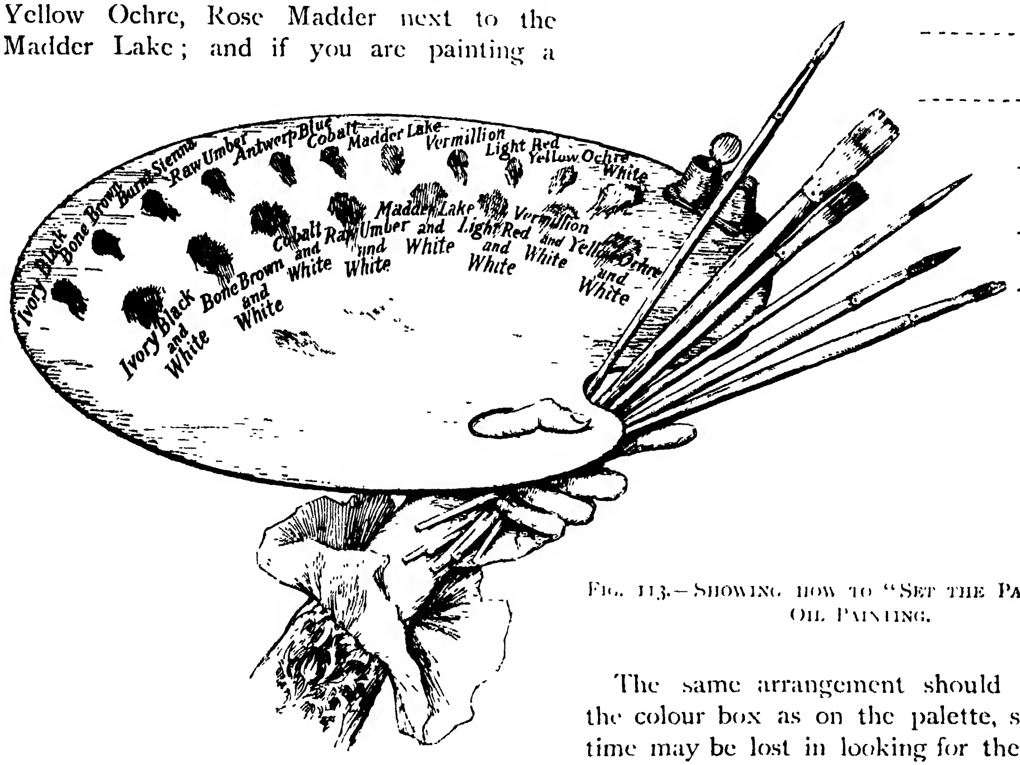
Impasto (from the Italian *impastáre*, to knead cover with plaster) is the application of the thick paint, just as it comes from the tube. It is seldom desirable in the work of an amateur. To be effective, the paint must be "loaded" on with that absolute confidence that only comes from consummate knowledge. Timidity or exaggeration in the operation will equally betray the executant's lack of skill. On a small canvas, impasting is seldom necessary except perhaps for high lights. There is always the danger of the "loaded" paint producing cast shadows, and the smaller the canvas the more noticeable this will be.

The Light.—All cross lights must be avoided. The light should come from one window only —a north one, if possible, as this affords the steadiest and least variable light. An east window is the next best, as the direct sunshine soon leaves it. If, however, the outlook is to the south or west, the rays of the sun may be excluded by pinning white tissue paper against the sash, or by an inner frame covered with white cotton stuff. If a stronger effect of light and shade is desired, the lower half of the window may be screened with some dark material. The light should come from the left; otherwise an inconvenient shadow falls on the work.

Setting the Palette.—Our illustration shows how an artist arranges the colours upon his palette—"setting the palette," it is called preliminary to getting to work, and indicates the proper way to hold the palette and brushes. A well-ordered palette is an absolute necessity. The colours must be kept clean, and they must be arranged in the order in which they are most likely to be needed for mixing tones. Every painter sets his palette in the manner that experience has taught him is most convenient; but the beginner will do well to follow, at first, the method of some good teacher. The following directions are based on the practice of Mr. Frank Fowler:—

Begin at the top of the palette, at the extreme right, placing the colours about an inch from the edge. Begin with White, and then, in order, put out some Yellow Ochre, Light Red, Vermilion, Madder Lake, Cobalt, Antwerp Blue, Raw Umber, Burnt Sienna, Bone ,Brown, and Ivory Black. Leave at least an inch of space between each colour. Additional colours should be put directly above or under similar ones already on the palette. For instance, Cadmium next to the Yellow Ochre, Rose Madder next to the Madder Lake; and if you are painting a landscape, you may need Terre Verte and Zinober Green in addition to Cadmium, and these you will place between the Antwerp Blue and the Raw Umber.

The second row of colours shown in our illustration is about half an inch lower down on the palette, and repeats the colours set out above, with the addition in each case of a little white loosely mixed with it, so that any tone of any particular colour will be ready for use. The colours in the first row are the Regular Palette. They must be kept undefiled; any portion of them that is needed for mixing should be taken up with the knife and brought down to the middle of the palette. They will be found fresh enough to work with the next day. Some additional colour may be added to the little heap where needed, and a little oil may be mixed with the left-over colour that may be dry. The mixed tones must *not* be allowed to remain; they should be removed, with a rag, from the middle of the palette at the close of the day's work.


Ivory Black
Bone Brown
Burnt Sienna
Raw Umber
Antwerp Blue
Cobalt
Madder Lake
Vermillion
Light Red
Yellow Ochre
White
Ivory Black and White
Bone Brown and White
Cobalt and White
Raw Umber and White
Madder Lake and White
Light Red and White
Vermillion and White
Yellow Ochre and White

Round Bristl brush for ligl colours.

Flat Hog's - ha brushes for bacl ground and larg surfaces.

Sable Rigger.

Round Bristl brush for dai colours.

Small Hog's hai brush

FIG. 113.—SHOWING HOW TO "SET THE PALETTE" FOR OIL PAINTING.

The same arrangement should prevail in the colour box as on the palette, so that no time may be lost in looking for the pigments when we wish to replenish the latter. In every pursuit some allowance must be made for loss, so do not be afraid of wasting paint. Leslie said he "hated a starved palette." Better have too much than too little, as plenty of colour makes a freer and more effective work; and for this reason, sable brushes, which take up too small a quantity, should usually be employed only for small work, such as the stems, stamens, and delicate parts of flowers.

The Lay Figure is a big jointed doll representing the human figure. It is a very useful companion in the studio, but one must beware of depending on it too much. It would be absurd, for instance, to try to use it as a model in drawing the nude. An artist always uses the live model. The lay figure is chiefly employed for finishing off elaborate drapery, which, however, should first be sketched in from a live model. It is also useful in groups of two or more figures where the live model can pose for a long time, leaning upon it without being disturbed. For merely composing and sketching in your ideas, the lay figure may serve in giving the proportions, but the action should always be drawn directly from life.

The best lay figures are French made; they may be had life-size, covered with stockinet, with every joint arranged to move as in nature. Sometimes they are supplied with life-like head and hair; but such are far too costly for the ordinary purse. A life-size lay figure of good quality, moving easily, one that can be placed in any position and screwed to remain so, can be bought for between £16 16*s*. and £21. It is covered with cotton stockinet, and has a head of white composition, which can be painted by the artist himself. A wig of any colour may be bought to use with it.

PAINTING IN MONOCHROME.

THE transition from drawing in charcoal and crayon, from the cast and from the living model, to painting from the cast in monochrome is natural and agreeable. It is the best possible preparation for painting in oil colours with a full palette: for it insists at once on the careful study of values, the intelligent massing of light and shade, and free handling of the brush. Such preparation is invaluable, not only to those who intend to take up portrait or figure painting, but also to those who intend to devote themselves particularly to landscape painting, or even the painting of flowers and still life.

The following directions for painting from the cast were drawn up (in 1876) by Sir E. J. Poynter, P.R.A., for use in the British National Art Training Schools, of which he was Principal:—

"For monochrome painting use Flake White, Raw Umber, Blue Black, and, when the colour of the cast requires them, Yellow Ochre, Raw Sienna, Burnt Sienna.

"Mix up a tint with the palette-knife:

"For the shadows.

"For the darker half-tint.

"For the light half-tints or general colour of the casts.

"Match the tints with the knife against the cast, so as to get the colour as true as possible. The tints must be of the *prevailing* colour of the shadow or half-tints required.

"If there is any quantity of strong reflection in the shadows, which contrasts in a marked manner with the cast shadows, mix up an additional tint for the reflections.

[N.B.—In matching the tints against the cast, the knife must be held in the full light between the eye and the cast, but so that there shall be no "shine or glare" on the paint.]

"If the student is working in the full light of the window, and the cast is in the darker part of the room, he must go near to the cast to match the tints, or they will be too dark; otherwise he may match them from his place.

"Make a careful outline of the cast in charcoal, and, before beginning to paint, draw in the outline with a sable brush filled with Raw Umber thinned with turpentine. *It is most important* that the outline shall be finished and correct before beginning to paint.

"Next get rid of any too abrupt transition between the shadow and the darker half-tint by laying on intermediate tints between them, being most careful not to lose the drawing at this part, which is the most difficult gradation to render in the painting.

"In the same way correct any false tones in the half-tints by laying on the right colour over the places which are wrong.

"Finally, when the modelling is complete, put on the highest lights with a full brush, taking care that the colour used is absolutely right.

"If these directions are attended to, and the right tints are laid on in the right places, there will be no need to retouch, and the work may be taken up the next day where it was left off.

"To prevent an awkward join between the two days' work, do not leave off at an outline, but carry the paint a little over the edge; and begin the next day's work with some of the same (or exactly similar) colour, painting a little of the edge of the previous day's work; the join will then not be visible.

"The painting should be so done that it should be finished at the first painting; it is therefore necessary that no more be begun in the morning than can be completed in the day.

"First, lay in the shadows with the shadow-tint, painting a little over the line of transition between the light and shade, so as to have some colour to paint into. Next to this lay in the darker half-tint, painting it into the shadows, but not passing beyond the transition line, or the drawing will be lost; and carry this tint as far as necessary toward the light, mixing with it some of the lighter half-tints as it graduates toward the light, following of course the gradations and drawing of the cast.

"Next, cover the lighter parts with the lighter half-tint, and if the spaces of highest light be large, mix white with the tint, imitating the gradations in the cast.

"Next, paint the reflections into the shadows, mixing White, or White and Yellow Ochre, or Yellow Ochre only, with the shadow-tint to lighten it, according to the greater or less degree of warmth in the reflection; and paint in the darker parts of the shadow (picking out the forms) by mixing Raw Umber, Black, and Raw or Burnt Sienna, with the shadow-tint, following in each case the gradations in the cast."

PORTRAIT AND FIGURE PAINTING.

THE following is a rich and varied assortment of colours for figure painting:—

Silver White.
Yellow Ochre.
Indian Yellow.
Naples Yellow.
Light Cadmium
Deep Cadmium.
Indian Red.
Light Red.
Venetian Red.
Vermilion.
Rose Madder.
Madder Lake.
Burnt Sienna.
Cobalt.
Permanent Blue.
French Ultramarine.
Antwerp Blue.
Green Oxide of Chromium.
Raw Umber.
Bone Brown.
Ivory Black.

Use brushes made of bristles, and choose those with rather long hair. A dozen or so of Nos. 1 to 10 will be needed, and several larger ones for backgrounds and broad masses, also a small, round-pointed sable brush or two for line and fine work; but do not get into the habit of using small brushes.

I. STUDYING THE MODEL. POSING.

It is always well before setting to work to sit for a few minutes looking carefully at your model, noting just where the light falls and the shadows lie. Much time may be saved by doing this in the first place.

Usually rather a high side light is the best; but if it be too high or too powerful, it will be apt to throw heavy shadows under the eyes, nose, mouth, and chin. Different arrangements of light will suggest themselves according to the requirements of the subject. For instance, in the case of a blonde young lady with delicate features, a luminous treatment of the face would probably be most desirable, and you would avoid any shadows that were not actually necessary to give merely the necessary relief to the features. The smooth places of the face of a young girl would also call for very simple lighting. And so with youths and children. On the other hand, in the case of a man with strongly marked features, for instance, the opposite treatment might be essential, in order to bring out to advantage certain characteristic lines and expression.

The principal points to be observed in securing the first impression of a head may be noted thus: First, the *size* of the head in relation to the body; secondly, the shape; thirdly, the space occupied by the features in relation to the circumference of the cranium. In some faces the features are closely placed together, leaving a large space between the line of the eyebrows and the top of the head;

the forehead may or may not be high here; it generally is so, though at times we find the hair growing peculiarly low, thus emphasising the dome of the skull.

In other cases the features are placed so far apart that very little hair is seen from the level front view of the head, causing the face to appear very large, though the head may actually be comparatively small; the slightest exaggeration in either of these personalities will be decidedly unfavourable, and should be studiously avoided; yet the natural tendency of the student where any marked peculiarity exists is to exaggerate.

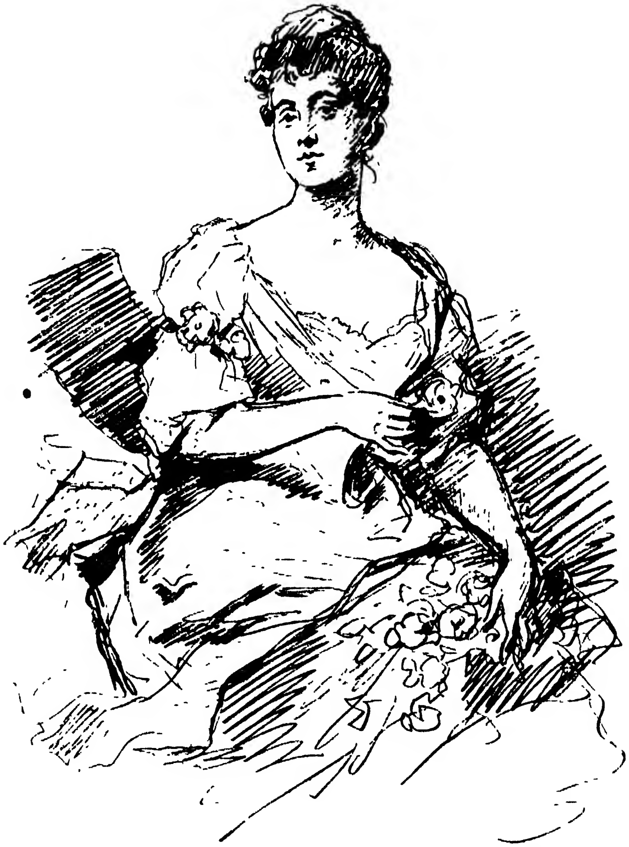


FIG. 114.—MEMORANDUM PENCIL SKETCH FOR A PORTRAIT. BY R. DE MADRAZO.

Observe well the shape of the forehead, the form of the eyes, the line of the nose, and the character of the nostrils; also the character of the mouth and the curve of the lips.

Any exaggerated turn of the head on the shoulders, in a portrait, is tiresome to contemplate for any length of time, knowing as we do that such a pose in nature would soon become fatiguing. A head thrown up so as to foreshorten the features from below gives one a constant desire to turn the face down, or to look at it from above; it also presents an uninteresting view of the under part of the nose and chin. If, on the contrary, the face is allowed to drop too much, the chin and nose appear lengthened, the cheek bones assume undue prominence, and unbecoming shadows fall beneath the contours. Either pose is, generally speaking, very undesirable in a portrait.

There are cases, however, where an exception must be made to these rules: should a lady's nose, for example, be decidedly *retroussé*, you may considerately allow the head to incline downward a little, as though she were reading a book, or (if very young) perhaps "lost in meditation, fancy free."

In another sitter, where this dominant feature exhibits an unusual length or prominence, such peculiarity may be modified by elevating the chin slightly, so as to foreshorten imperceptibly the distance along the bridge, from point to top. Great care must be exercised in the drawing here, as even a slight exaggeration tends to produce grotesqueness.

Strive to convey the idea that the mind and body of your sitter are in repose; that he is sitting still, for the reason that he wishes to do so, not that he is obliged to remain in a certain position because it is required of him. In order to secure this result, you should do your part by not embarrassing him with too much attention at first. A convenient seat, sofa, chair, or divan should be placed in the proper light, and the background arranged on a movable screen behind it. Here let him place himself naturally and without too much apparent intention; if you will meanwhile busy yourself with palette and brushes, he, finding that he is not under scrutiny, will relax his muscles and will gradually adapt himself comfortably to the position. Engage him in conversation while you are getting ready, and just as soon as he becomes interested, and the self-conscious look disappears from the features, quietly take up your charcoal and simply block in the proportion of the face and position of the features, and before he has had time to realise that you are at work, and stiffen his features again into a conscious expression, you will have secured the foundation of your portrait

II. THE FIRST PAINTING.

Your canvas should have rather a smooth surface. If the cheaper grade is used, a raw potato rubbed over the canvas before you begin work will make it delightful to paint on.

For the head and shoulders only, 14 × 18 is a good size. In sketching in your subject with charcoal, use a medium hard stick for the outline and a soft one for the broad masses. Get the action and general proportions first; then put in the broad masses, keeping them simple, and indicating the features as much as possible by tone, not outline; use bread to take out the lights.

The student almost invariably finds that, in his haste to go on to the attractions of colour, he has hurried his preliminary drawing; or, at least, has begun to paint before the head is in its proper proportions, or before the features are in their true position. He finds, perhaps, that one eye is higher than the other in its relation to the line of the nose and mouth, or that the mass of the head is too broad for its length, or too long for its width. These are discouraging defects to discover when the whole is laid in with colour; but they may be readily corrected while it is still in charcoal.

The head once well drawn, "fix" it by spraying it with "fixative" in the same way as charcoal and crayon drawings are treated (see p. 3). This prepares it for the first stage of the painting.

The first painting is in monochrome. It is a state of the work that will determine in a great degree the final result. It impresses the forms a second time upon the memory, and gives an agreeable warm undertone to subsequent painting.

This undertone consists of a simple flat "wash" of Burnt Sienna and Ivory Black, mixed to a certain fluid state by the use of turpentine. Be very particular to preserve strictly the shadow forms as indicated already in charcoal; do not take liberties with them, or else each successive painting will be likely to be still farther removed from the original statement of light and shade, and so new difficulties will be encountered, and demand reconsideration at a more embarrassing stage.

Draw the forms of the features very definitely at this time, so as to be thoroughly impressed with their characteristics; for in the second stage of the painting, when colour is first employed, the *finesse* of these forms is likely to be temporarily obliterated by the movement of the brush and the preoccupation of the painter to secure breadth of light and shade. We do not insist, in this first laying in of colour, that the pupil be over careful to retain the detail of form in each particular feature after having twice drawn them with attention. It is very essential to mark their position—that is, the space they occupy in the mass of the face; but the vital impression of an object receiving planes of light and shade is in danger of being sacrificed if these incidental spots, eyes, nose, and mouth, are elaborated at this period of the work.

III. THE SECOND PAINTING.

The thin wash of Burnt Sienna and Black that you used in the first painting, having been made with turpentine only (which is volatile), has dried quickly, and you may now, without delay, proceed with the use of solid colour, using linseed or poppy oil as a medium; or if you find it more agreeable, a mixture of equal parts of oil and turpentine.

Begin by putting in the background, laying it in with broad tones, keeping the colours pure as possible, blending them on the canvas and not on the palette. Of course, if not certain of a tone, you will have to work the colours together on the palette until the right combination is found. Once found, dip your brush in freely, and lay the colour upon the canvas boldly. This will give it a much more luminous effect than if you play with it on the palette.

You have, now, something against which to relieve the head, and a help to determine the force of the light and shade on the face in relation to the background.

After painting the background—using the largest brush available for the purpose—proceed next to lay in the head in broad masses of light and shade and colour, omitting unnecessary detail until later. We must first establish the planes of the head.

Work boldly with a full brush on the shadows as well as the lights. Do not be afraid that you will sacrifice transparency of shadow by doing this. Transparency comes not, as some persons suppose, from "loading the lights" and painting the shadows very thinly, but by depicting the shadow in its full relation to the light.

Your work should next show the interior modelling of the whole face, the high lights, half-tones and positive darks; the arch of the brow, the characteristic lines about the nose and mouth, the squareness or curve of the chin. The colour of the mouth will be indicated, and the colour of the eyes, irrespective of the pupil.

When all is thoroughly dry, scrape the canvas a little before the next painting.

IV. THE FINAL PAINTING.

The final result of the head on your easel may be due to a third or even a fourth painting.

The touches that complete the reality of portraiture are now given; hints that emphasise the likeness should be looked for and made use of, lurking notes of expression detected and brought out; everything, in fact, that contributes to the personal character of the head should receive the closest scrutiny and be touched in with judgment. Reflected lights, varieties of values, the just proportions of light and shade, the salient notes of colour can be added in this final stage of the work, with little fear of detracting from the truth of the impression; on the contrary, if placed with discrimination these will only enforce the life-likeness of your work.

The same care that ensured truth of effect in treating the head should be exercised when painting the costume. The dominant light and dark and all intermediate values must be observed in their relation to the head and to the background. Touch in indications of fold in the dress or coat, and give a sense of modelling by the variety and truthfulness of the lights and darks. Put in the light on the shoulder which now detaches it from the background, a fact it was not imperative to observe before.

Whatever valuable fact reveals itself upon further scrutiny must be made use of in heightening the impression; as, for instance, the high light on the forehead, the touches of light that model the fulness above the eyebrows, the light on the bridge and at the tip of the nose, the touches of light at the corners of the mouth, the accent of dark on the cheek-bone and on the chin, as well as a careful study of the half-tint which models the jaw and detaches it from the throat—all these are necessary. Look also for the play of light on the hair, the variety of colour that it presents. Do not neglect the reflected light on the shadowed side of the forehead, for this has much to do with the just construction of the head.

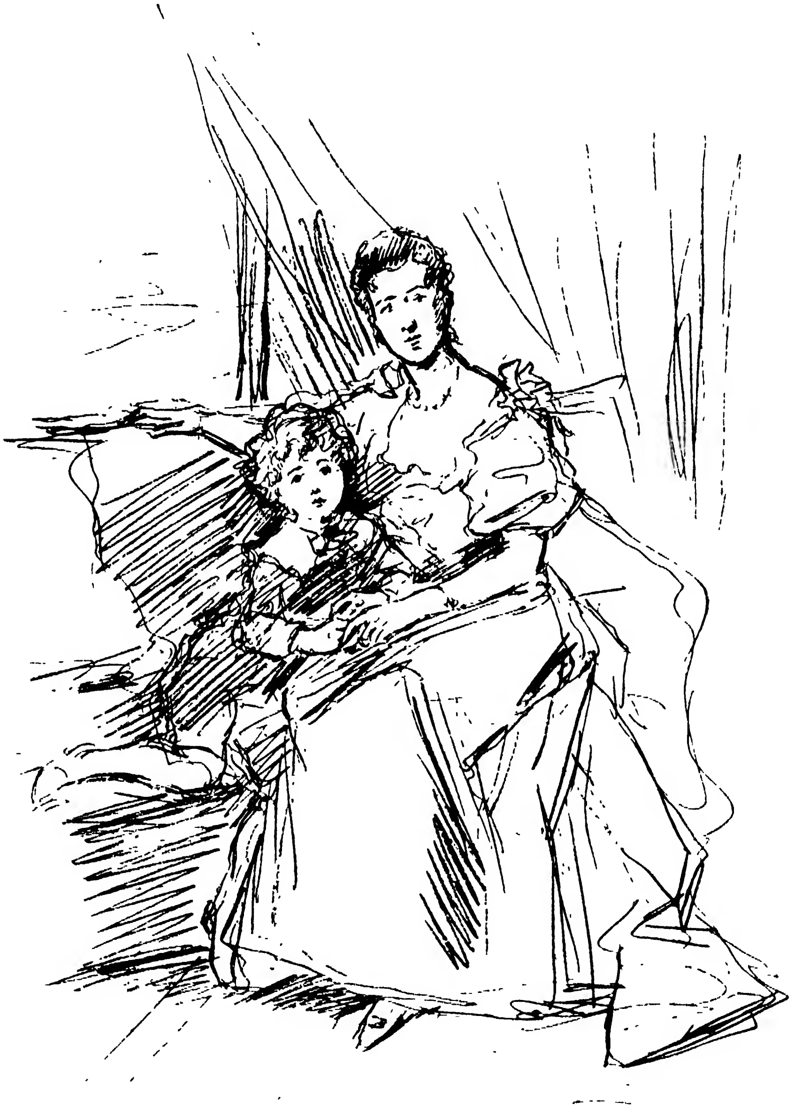


FIG. 115.—MEMORANDUM PENCIL SKETCH FOR A PORTRAIT GROUP. BY R. DE MADRAZO.

V. FLESH—HAIR—THE FEATURES.

You should look carefully for the colour of the intermediate flesh tone which unites the light and shade. This half-tint you will find to be a little grayer and cooler in colour, particularly where it grows lighter and merges into the light. Paint it, however, with just as much decision and just as heavily as you did the shadow, and after it is thus laid on, you will find that the transition not now being so abrupt between the light and dark, they may be more easily united. A dry flat brush is sometimes useful in bringing these tones together; but in any case care must be taken not to make this half-tint out of harmony with the light and dark of the head. If this precaution be not observed, the modelling and construction will be destroyed.

A common fault of the portrait painter is to represent his sitter as either too florid or too pale, and this is usually due to his starting wrong—on too colourless or too ruddy a key.

The colour of flesh is so variable that to recommend any series of combinations of pigments for the rendering of different kinds of complexions can be of little use to the student, whose only safe plan is to experiment for himself. Yet the following general hints for colour combinations will be suggestive:—

Flesh Tints.—White and Naples Yellow; White and Light Red; White and Madder Lake; White, Naples Yellow, Vermilion; White, Naples Yellow, Vermilion, Light Red; White, Naples Yellow, Madder Lake; or White, Black, Vermilion; Black and Burnt Sienna; Madder Lake and Raw Umber.

General Shadow Tints.—Light Red and Umber; Indian Red, Raw Umber, Ivory Black; Madder Lake, Yellow Ochre, Cobalt, using always a qualifying amount of Silver White.

Flesh in Light.—Yellow Ochre, Light Red, Madder Lake, Cobalt, qualified with a little Silver White.

In painting hair of any colour—blond, brown, black, or gray—the best plan for the student is to put out upon his "secondary palette" only those colours which will be actually needed for the local tone. It is so difficult to keep the tints simple and distinctive that, without this precaution, the beginner finds his light tones running darker and his darker tints gradually losing strength, until the effect in both is weakened.

For example, if we are going to paint light golden hair, put out on the palette: White, Yellow Ochre, Pale Cadmium, Raw Umber, Ivory Black, Light Red, Madder Lake, and Burnt Sienna. Cobalt may be added, but must be used only where the half-tints meet the flesh.

In the painting of *brown* hair a most useful colour is Bone Brown. It is mixed with Yellow Ochre, White, a little Cobalt, Ivory Black, and a very little Madder Lake for the local tone; the shadows are enriched by the addition of Burnt Sienna, the lighter colours being omitted. The high lights will be cool and gray in quality, and by their form as they lie upon the hair we indicate the texture. In very dark or black hair, Ivory Black is substituted for Bone Brown in the local tone, and Burnt Sienna is mixed with it in large or small quantities. When the lights present a blue or purple tint, Cobalt and Madder Lake are used with Ivory Black, a little White, and Yellow Ochre.

Brown Hair.—Use Ivory Black, Bone Brown, Madder Lake, Yellow Ochre, and White for the general tone. For the shadows add Burnt Sienna. For the half-tints add Cobalt and White.

Black Hair.—Ivory Black, Madder Lake, and Yellow Ochre; with Burnt Sienna and a little Cobalt in the shadows. To lighten the tones use White.

Blond and Golden Hair.—To paint light yellow, golden, or blond hair, use for the general tones Yellow Ochre, Silver White, Raw Umber, and Ivory Black. For the shadows Burnt Sienna, Ivory Black, Raw Umber, and very little Cobalt with White. The half-tints may be painted with Ivory Black, White, and a little Cobalt, Light Red, and Raw Umber. Use Yellow Ochre, White, and a little Ivory Black in the lights.

Reddish-Brown Hair.—Burnt Sienna, Raw Umber, Ivory Black, a little Cobalt, and White. Omit the Raw Umber in the shadows. If necessary add Yellow Ochre in the lights.

Very Light Reddish Brown Hair, or Red or Reddish Gold Hair.—Use Light Red, White, Yellow Ochre, Raw Umber, and Ivory Black. In the shadows add Cobalt and Burnt Sienna, and in the lights omit Raw Umber. For the half-tints use Light Red, White, Cobalt, and Ivory Black. The proportions of the colours will vary according to the tone of the hair. If the hair is light more Yellow Ochre and White will be used, and if dark there will be more Ivory Black and Burnt Sienna.

Silvery White Hair.—First lay in a general tone of White, Yellow Ochre, qualified by a little Light Red, Cobalt, and very little Ivory Black; afterward put in the lights with White, qualified by a little Yellow Ochre, and a very little Ivory Black. The shadows will need Ivory Black, Silver White, a little Madder Lake, Light Red, Yellow Ochre, and Cobalt; in the deeper accents use Burnt Sienna, Ivory Black, and Cobalt.

Gray Hair may be painted with White, Raw Umber, Yellow Ochre, and Ivory Black. The quantity of yellow and black will vary according to the quality of gray. In the shadows you will need Burnt Sienna and Cobalt. Unless black is used very discreetly it will make the colours dingy. It may be omitted altogether, and gray hair may be painted with White, Vandyck Brown, and Cobalt.

Eyes and Eyebrows.—While much of the wonderful structure of the eye is visible in detail to any who may look for it, the artist, being concerned only with general effect, has to treat the eye with considerable breadth. He must not fail, however, to note the formal differences assumed by the eye at various periods of life, both as to line and the tint of the "white." Most expression is found in the eyes of young children, who smile and laugh almost entirely with their eyes. Be careful to observe where the eyelashes cast a shadow, above or at the corner of the eye. You will see that they do not surround the lids with equal force, but are dark only at certain parts, according to the direction from which the light strikes the head. Although the eyelashes are formed of hair, no attempt must be made to recognise the fact in painting them. Much of the character of the eye depends on the upper lash; the lower lash contributes but little to the marking of the eye.

The eyebrows must be closely observed and painted with extreme care, for no little part of the character of the sitter is expressed by them. It is a fault of beginners to arch them and to paint them too much. Of course, there must be no attempt to individualise the hairs. All the characteristics of the eyebrows may be expressed by a few—very few—spirited touches.

Blue Eyes.—French Ultramarine, Grays, and White.

Brown Eyes.—Raw Umber, Ivory Black, Light Red, White.

Gray Eyes.—Cobalt, Light Red, Gray, White.

Black Eyes. Ivory Black and Burnt Sienna.

The Mouth.—The colour is laid in with a fresh, warm tone of red, indicating the light and shade, and less attention is paid to detail than the fact that this feature is in the right place and resembles the model in its general effect of size and proportion. Now, the first step in securing a good likeness is to discover just where this "right place" may be. It looks a very easy matter to do this, but it is one of the most difficult things. A general tendency among beginners is to make the upper lip too long. This often occurs through a careless dragging down of the lines in repainting, so that the original drawing is lost. Such a mistake affects the expression unpleasantly, and to avoid it the student should continually verify his spaces between the features by comparative measurements.

The Lips of healthy babies and children are clear coral, and rosy lips are not common in youth. But the lips of men and women are not always red, by any means. Study those of your sitter, and you may find them pink, purple, gray almost, and colourless quite, according to the state of his health or mode of life.

Vermilion, Rose Madder, Madder Lake, and Light Red will give the local colour of the lips.

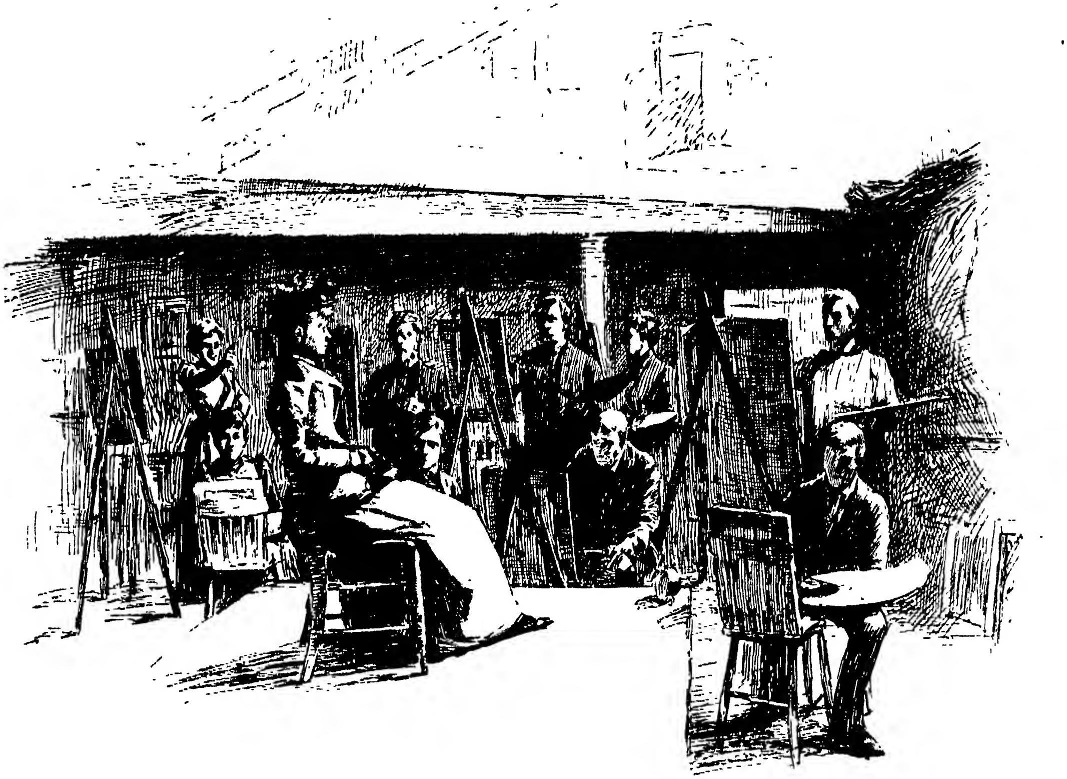


FIG. 116.—PAINTING FROM THE DRAPED MODEL IN AN ART SCHOOL.

The Model (sometimes one of the students, who "take turns") is posed on the platform or "throne," around which the easels are placed in a double row. The student to the extreme left of the picture seems to be still at the stage of the preliminary charcoal sketch, for she is measuring, with her eye, the comparative size of the head to the body of the Model.

The Nose.– You must clearly understand the construction of the nose, so that you may intelligently indicate with the brush the connection of bone and cartilage and suggest the play of muscle beneath the fleshy covering. It is the lack of such knowledge which makes the face in some portraits look like a wooden mask rather than a mobile human countenance. In painting the nose, the first facts to be established are its length and breadth; these facts in relative proportion to the whole face should be correctly indicated in the preliminary charcoal drawing, though as the colour covers up the guiding lines, you must to a certain extent be continually redrawing with the brush. Ascertain by comparative measurement the width of the space occupied by the upper part of the bridge of the nose in connection with the eyes and eyebrows. Note whether the bridge is broad or narrow here, and observe *where* the greatest breadth occurs. In some faces this space between the eyebrows is very much contracted, while across the nostrils or at the base of the nose there will be a considerable breadth; in other examples you may find exactly the contrary conditions: a great space is seen between the eyebrows, while the nostrils are small and round or perhaps high and narrow. Such departures from the conventional type are matters of importance to the painter in establishing a likeness.

Do not make the shadow beneath the nose too dark. This is a common fault with beginners; compare this tone with the deepest shadow beneath the eyebrows, and you may find it decidedly warmer and lighter in value than you had imagined. The half-tint which models the nose at the side is often painted much darker than it should be; while the high light which glances along the bridge and models the end of the nose is frequently made too uniformly light in colour and unmeaning in form. The general colour of the nose should be studied in relation to the coloration of the whole face, and not painted separately; being such an intrinsically difficult piece of drawing, it often happens that the student will unwisely leave this feature unfinished till the last, after the whole colour scheme is established. A fresh flesh palette is perhaps mixed, and thus the tint may be made a trifle warmer or cooler without one noticing the fact until the work is finished; then one is shocked to find that the nose in the picture appears more generally pink, or yellow, or gray (as the case may be) than the surrounding flesh, and no amount of patching up will remedy it. It is indispensable that the nose, cheeks, forehead, chin, and ears should be laid in at one and the same time, and not separately, at different sittings. A touch of colour to indicate the mouth is sufficient at first, but this colour must be true to nature, and the general form and proportion of the lips suggested in their relative position from the beginning.

In painting the shadow beneath the nose, observe carefully the form of the darkest touch where it lies upon the upper lip. This shadow is not nearly so dark as you may think, but is ruddy in its deepest spot by a reflection from the warm flesh tint of the nose above; if painted too dark, it has the effect of a hole cut into the upper lip when viewed from a distance. See that the shadow along the bridge of the nose, which in a conventional lighting falls upon the cheek, is not too dark or too uniform in value. Study the outlines here closely from nature, and you will find that the form of this shadow influences the expression considerably, especially in the shape it assumes around the nostril.

Strong Touches About Mouth, Nostrils, and Eyes.—Madder Lake, Burnt Sienna, Vandyck Brown.

VI. DRAPERY.

As soon as the student has attained to some measure of success in painting the head, it might be well to give the model a rest, and devote himself for a while to studying drapery.

Take a good-sized piece of some heavy fabric that will form round, rich folds. Cloth is the best for a beginner, as it does not take strong lights and demand such skill in treatment as material having lustre does. Loop it upon some article of furniture, if you do not own a lay figure, and allow it to fall in deep folds that will give some diagonal lines, some well-rounded surfaces, and some decided angles. Have it placed where the light will strike it from one rather high source at the left, and sitting a good distance from it, just so that you look at it when inclining your head a little to the left, so that your easel may not obstruct your view, trace with a pencil on a piece of oil sketching paper a correct outline of these folds.

Do not choose anything of a brilliant colour; quiet tints are less likely to prove troublesome under inexperienced hands.

We will say that your fabric is a chocolate brown. Set your palette with the following colours, putting the first-named on the projection near your thumb, and so around near the outer edge of the palette in the order in which we mention them, giving the largest quantity to those that correspond nearest to the actual colour of the cloth:—Silver White, Naples Yellow, Yellow Ochre, Burnt Umber, Vandyck Brown, Terra Verte, Madder Lake, Ivory Black.

Take of the white what will make a thick mass on the first inch of your knife-blade, and lay it on the centre of your palette; add about half as much Naples Yellow, and rub them thoroughly together with the flat of the blade. Scrape this up and lay it just below the colour first put out, for it is to begin a row of mixed tints. The next tint is to be formed of the same, with the addition of one part Yellow Ochre. Then all these again, with the addition of one part Burnt Umber. Then these again, with one part Vandyck Brown.

You now have four warm tints. Next, mix together Terre Verte and Madder Lake (complementary colours) in such a proportion that you lose both the red and the green and get a neutral tint. Add white sufficient to form a light neutral, and place this tint just below the first light warm tint. For the next, you want the same without the white; for the next, the same, with sufficient Ivory Black to make a very dark neutral. This gives you three cool tints.

Now select several of your short, flat bristle brushes, varying in size from one-half to one inch across. Always use the largest brushes that you can make serve your purpose, and your work will be the broader and the more effective for it. Study your folds of cloth carefully, and see where they suggest the application of the various tints prepared. Decide where you want your darkest warm tint—that which approaches nearest to your prevailing local colour—and, having first dipped your largest brush in drying oil, charge it with this tint, and apply it to the surface of your canvas with short, vigorous touches.

It is best to begin upon that portion of the drapery which is farthest from you. Lay in all that is required of this tint for a good space, then paint the deepest part of the adjacent folds with another brush, employing clear Vandyck Brown. You have probably fancied that these places wanted black; but deep recesses want warm colour, not cold. With another brush lay on your next lighter warm tint where it seems to be called for. Remember your work is confined so far to the distant portion of your drapery, for if you begin by spotting it and streaking it in various parts, it will not be easy for you to see quite what you are doing.

Now apply your cool neutral tints in the same manner, where careful study shows you that they are needed. This will be much more difficult for you to decide, for cool tints are not easily recognised by the unpractised eye, especially where they seem directly opposed to the local colour. Be sure to use cool tints on the edges of cast shadows. Do not be appalled at seeing your work assume a broad blocky appearance, and do not be tempted into softening up and smoothing down. Let each tint lie on fresh and bold as at first. Now you are ready to use your warm lights. Lay on the second one wherever it seems to be required; then, with a full brush and a deft touch that leaves the colour strong and telling, throw on your highest lights.

A portion of your drapery is now painted, and with the experience that you have gained, proceed with the central portion in the same way. Lastly, with the nearest portion. Your work will, as the surface gets covered, look less and less startling, and the nearer portions will grow bolder and stronger, which is what you want.

Persevere with similar studies of drapery, employing after a time other colours on the same principles, until you can produce what will, when placed at a proper distance, represent perfectly the fabrics themselves.

Suggestions as to painting textures will be found under the heading of STILL-LIFE PAINTING.

VII. TREATMENT OF HANDS AND ARMS.

Strictly speaking, a "bust portrait" includes only the head and shoulders, with a mere suggestion of the arm at its juncture with the chest. The hands do not naturally enter into a composition of such a character, and it is safe for the student to accept this rule, though eccentric arrangements may sometimes be seen, where the hands are clasped over the head or under the chin, thus admitting their introduction into a small canvas. Such a composition, however, is generally strained and unnatural, and the effect of the picture would be more pleasing if the hands had been omitted entirely.

A half-length (or Kit Kat) portrait readily admits of the introduction of one or both hands, though here also the composition may be so managed as to evade their introduction, if for any reason the artist desires to omit them. One would naturally imagine that in a fúll-length portrait there could be no question on the subject—that certainly the hands must play their part here; but the skilful painter will show you that this is not so. One of the most charming portraits the present writer remembers showed a lady standing erect, with her hands entirely concealed, yet evidently clasped behind her back; this was clearly indicated by the angle of the elbows and turn of the forearm. Attention was thus concentrated upon the head, in combination with the graceful lines of the figure, brought into full relief against a background of golden-brown plush. The robe worn was of primrose satin, with the whole front, from throat to hem, of delicate Oriental embroidery—gold and silver upon a ground of ivory-coloured velvet. Any possible hint of awkwardness in such a pose was obviated by the introduction of a magnificent fan of natural ostrich plumes held in the hands behind the back. The position of the fan, viewed in connection with the line of the forearms, suggested also that the lady was holding it lightly in both hands with the palms turned outward, while just a sufficient portion of the semicircle of plumes was visible to complete the composition. While the face was full front, the whole figure was slightly turned, giving a three-quarter view, which necessitated some clever work in the foreshortening of the elbow.

Another example that may be cited is a full-length, the life-size figure of an elderly lady (also standing), simply and gracefully composed against a soft, gray background representing a wall. Neither hands nor feet were to be seen, for the plain, long, black skirt of heavy, dull silk reached quite to the floor, the slender figure being completely draped in a soft, white shawl of silken crêpe, which fell in well-studied lines almost to the knee, where it was finished by a deep, netted fringe. This shawl was drawn over the bust, and held in position from *within* by the right hand, which was entirely hidden, though its presence was distinctly indicated by the shape of the folds, as they were gently clasped in the slender fingers. The other hand and arm hung down naturally at the left side, their forms being sufficiently felt through the thin silk to break the threatened monotony of line from the shoulder to the floor. Actually, therefore, we may say, the head and face were the only parts of the whole figure which were really and definitely presented to view on this large canvas, yet it conveyed a complete impression of a gentle and refined personality.

In giving these examples, let us not be misunderstood. We have no desire to teach you an easy way out of your difficulties, or to suggest that it is not necessary to learn to paint hands. The artists whose pictures we have referred to were skilled draughtsmen, with ability to carry out to the utmost detail every portion of the human figure. With them such a composition was a matter of choice, so arranged from the desire to secure some original or striking effect, and not through the necessity of evading a difficulty.

In some celebrated portraits one hand alone is shown, the other being concealed naturally by draperies, folds of the skirt, or laces trimming the bodice, and voluminous sleeves.

To draw and paint the hands in a portrait surpassingly well is not enough; they must primarily be the hands of the person you are painting, and their individuality must be strongly marked, so that their relation to their owner is unmistakable. This individuality we may look for, first in the proportions and general form of the hand as a whole; next, the shape of the fingers and the manner of holding them (separated or close together). Most important is the action of the hand in conjunction with the wrist. All these points indicate the character of the hand, which to a degree reflects the temperament of the individual to whom it belongs. The colour is also to be studied in connection with the local flesh of the face, though this is not always indispensable, as the hand may be gloved, perhaps thrown into shadow, or temporarily influenced by some reflection which will alter the natural coloration. In order to secure the proper action of the hand and wrist with the arm, these members should be drawn in connection with the head and shoulders, and not studied as separate entities.

It is not necessary to make, at first, more than a mere sketch or "block" for the hand, a few sweeping lines giving the general movement and correct proportion of the arm from shoulder to wrist; marking the angle of the elbow will do; or if the arm hangs straight, indicate distinctly the juncture of the upper arm and forearm. Do not forget the metacarpal bones which connect the hand with the bone of the forearm, thus forming the wrist and acting as a pivot upon which the hand may turn. It is by a careful study here that we arrive at a natural movement, while faulty or ignorant treatment of this portion of the anatomy is responsible for many an awkward effect where the hand is in itself actually well painted, but does not seem to convey the idea of its connection with the muscles of the arm. In studying the details of the fingers, particular care should be given to an individual peculiarity in form and colour; these indications being in some cases strongly expressive of personal character, though in others, again, they present no distinctive traits.

VIII. BACKGROUNDS.

In regard to the background for a portrait, the size of the canvas and the proportion which the figure occupies in relation to the picture plane have all to be considered. If the head and shoulders only are to appear, with no hint of the form below, a simple tone alone should be employed to give the effect of atmosphere. As a general thing, any attempt at elaboration, such as a figured damask, folds of plush, a carved chair-back, or anything of this kind, will detract from the simplicity of the composition and divert attention from the face. Of course in the hands of a master these elaborate backgrounds may be so managed as to keep their places perfectly, every obtrusive detail being suppressed, till the whole effect is so well balanced that the interest of the figure is really enhanced by its surroundings.

An excellent practice is to experiment upon a separate canvas when painting a portrait, and in the following manner:—Transfer the drawing (to save time) from the original canvas to another after the general colouring has been blocked in; and, while the first painting is laid aside to dry, rub in successively several different effects of background upon this duplicate canvas, trying various colours and values in relation to the flesh until the right key is obtained.

In the portraits of women, where the costume offers such opportunity for variety and richness of colour, this practice is especially valuable. If the dress to be painted requires elaborate detail, as in lace, embroidery, or brocade, much time and labour is saved by thus determining the general scheme of colouring in the first place; for after the drapery is painted in and the composition of the folds arranged in relation to the figure, it may become a serious matter to change an outline. It seems hardly necessary to urge the importance of painting the costume in relation to its background, and yet there are painters who neglect to do this, and work on, vainly experimenting upon a canvas without the model, trying innumerable tones behind a figure, striving for an effect which only serious study from nature will afford. We do not mean by this that all backgrounds must be realistically painted, but we would impress upon the student that any tone behind a figure should have its origin in some natural relation of values, in order to represent properly the desired effect of space and an enveloping atmosphere.

If the background selected is an elaborate one, it is better not to finish it entirely before the details of the costume are completed. Let all march on together, preserving, above all, unity in all parts as the picture progresses. There is no objection to the judicious use of a lay figure in the *second* painting of the drapery; for though one should never draw from this in the first place, yet it may be undoubtedly made useful in careful elaboration of lace, fringe, feathers, and other details, which must be kept in place while one is reproducing them. In finishing, any stiffness of line and fold should be obviated by a final sitting from nature, where a few sweeps of the brush in the right direction will be needed, following the more graceful suggestions of the natural lines.

Backgrounds for Portraits:

Gray.—White, Ivory Black, Yellow Ochre, Indian Red. Use Ivory Black and White to lighten parts that are too dark, or cool those that are too warm.

Yellow (suitable for rich dark complexions). —White, Raw Sienna, Vandyck Brown, Brown Ochre, and White.

Olive (suitable for fair complexions).—Terre Verte, Naples Yellow, Ivory Black, White; Terra Verte, Raw Umber, Naples Yellow.

Brown (suitable for auburn-haired persons). —Ivory Black and Burnt Sienna.

Stone.—Ivory Black, White, Raw Umber; Raw Umber and Naples Yellow; Ivory Black, White, Raw Umber, Naples Yellow.

Sky and Cloud Backgrounds.—Yellow Ochre and White; Ultramarine, Raw Umber, White; Ultramarine, Vermilion, White; Madder Lake, Yellow Ochre, White.

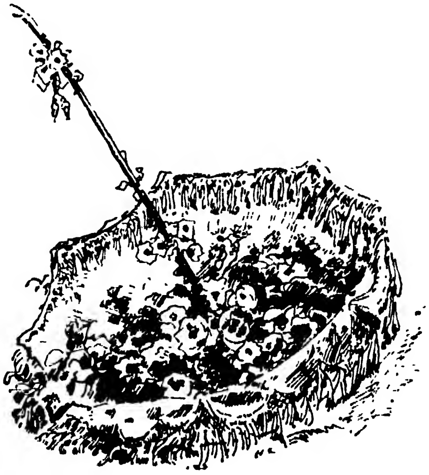
IX. COSTUME AND COLOUR.

One of the first questions which a portrait painter is asked by an intending sitter is, "What coloured dress shall I wear?" This sounds simple—a very easy question to answer; but it is really only the opening of a very complicated and difficult inquiry.

The colour scheme must serve two purposes. It must be such as to justify the existence of the portrait as a work of art, and it must be carefully devised, with the intention of presenting the sitter under the most favourable aspect. To achieve this double result, the artist must not only understand fully the subtle laws of colour relation, combination, and juxtaposition, but must also have paid great attention to the even more subtle question of the relation between certain colours and certain facial and physical types. In a word, he must have studied the whole matter of the application of colour, and he must have accumulated sufficient experience to enable him to fit a thoroughly appropriate colour scheme to each particular sitter. With this knowledge to guide him, he will find that his difficulties will be greatly diminished, and that instead of devoting himself with each successive picture to the construction of the very rudiments of a colour arrangement, he will be able to start at once upon the consideration of such far more important details as the proportion to be borne by the various colours one to another, and as the fixing of the pitch or key in which the whole harmony is to be composed.

One of the chief results of the artist's studies will be a conviction of the fallacy of popular opinion on the subject of what may be called personal colour—that is, on the question as to which colours suit particular types of people. Pink or pale blue for blondes, red or orange for brunettes, green for red-haired people, and black for every one who is in doubt, have been preached and practised by the makers and the wearers of clothes for generations; and in most instances these crude generalisations are based upon nothing but convenience, and have no motive more æsthetic than an idea of avoiding trouble. So, by way of setting that example which is, as we all know, better than precept, the painter must in his work attempt the combinations that the milliner or the dressmaker has neither the taste nor the inclination to think out. He must show that the blonde complexion does not look its best in pale and colourless arrangements, and that red and orange are not the only colours that become a dark skin. He must prove that the possibilities of colour adaptation are much more varied than people imagine, and that there is exceptional opportunity for harmonious refinements in the ordering and arranging of a costume. He must, above all, teach others to give to the subject something of his own careful analysis and close technical study.

The chances of harmonious combination are indeed almost infinite, for every varying shade of complexion will suggest fresh refinements and new æsthetic ideas. Here, a bright colour and rich red hair will be suited with equal proportions of greenish white and greenish black accented with deep pure orange; there, dark auburn hair and a clear complexion will find their most appropriate setting in warm purple, verging on crimson, with touches of bright gold. This blonde, with delicate pink and white cheeks and pale golden hair, will gain colour and physical importance from a costume of bright buttercup yellow or clear orange; that brunette, with her warm brown face and deep black hair, will find the purple of a ripe plum exceedingly becoming. Emerald green, by its cool reflections, will soften the hardness of the bright red and white skin, which is frequently associated with very black hair, and strong flame colour will give force to a complexion which is lacking in brilliancy and to hair which is of indefinite shade. Various types of dark beauties will find themselves well suited with such combinations as purple and blue green, purple and scarlet, orange and apple green, or black and pale salmon tinged with orange; and most fair complexions will look their best in the purer yellows and reds, or in arrangements of orange and white, gray and bright rose red, or copper colour and lemon yellow. Some blondes, especially those whose pallor is too absolute to be affected by the stimulus of juxtaposed colour, will find in the contrast and cold reflection of a black dress a strong accentuation of their natural whiteness. An effect so produced is naturally somewhat theatrical; it is occasionally permissible as a last resource, but the black must be absolutely unrelieved. Generally speaking, however, the fairer the skin, the stronger the colour that can be used, if only care is taken to keep this clean and pure in quality. The exact character of colour suitable to each person can only be decided by actual experiment and comparison, and it is only the artist who can do this in the right way.



FLOWER PAINTING.

I. INTRODUCTORY.—COLOUR COMBINATIONS.

THE general principles in regard to lighting, composition, and backgrounds for flowers will be found fully set forth in the first two chapters on FLOWER PAINTING in Water Colours. They apply equally to painting flowers in oil, and should be carefully studied by all who intend to work in that medium.

Before setting to work, have all your needed materials well arranged and ready to your hand- the requisite colours also on the palette —that any delay may be avoided. In painting flowers, time counts for much; as they will change more or less under the most favourable circumstances. For the same reason, always begin to paint early in the morning, as, later in the day, especially in warm weather, flowers fade more rapidly. Some are also more apt to droop when freshly gathered; it is well, therefore, to cut, sprinkle, and place them in water a little while before they are required for use.

The flowers selected for a first effort—it is best to begin with only one, or, at most, two or three—should be large and as simple in form as possible: thus the rose and the peony are too intricate in outline to be good subjects for the inexperienced, while the field daisy or the single tulip, for example, will be found well adapted for the purpose. The latter soon expands, but this may be obviated by encircling it with a ring of wire—one of the many contrivances preventive of change, sure to suggest themselves to the painter of flowers.

A narrow-necked vial or vase will be found the best to contain the flower, whose stem will thus have sufficient support. It should be at some distance from the eye, as one is too prone to lose sight of the general effect and observe minute details.

See that your design is well placed on your canvas, not too high nor too low, nor on one side. Then with a lead pencil or pointed charcoal block in the masses of your design. Never begin by shaping carefully some single feature, for when it is done you will probably find that it is not quite in the right place and must be erased, and all your work will be lost. Make a rough dash or two to indicate certain marked points in the sketch; then one will tell the story of the other, whether they will come out right or not, and when you are certain of it all, then will be time for details.

Place the flowers so that the light falls on one side of the study; seat yourself so that you see enough of the shadow side and far enough away to get full effect of light and shade. Put your lightest mass of colour in full light, and see that the colours are massed, not sprinkled or peppered around all over the study. Do not place all the flowers looking toward you, but show the side and back of some. Do not make out every little stem and leaf to painful perfection, but let some of them get lost in the tangle. A little mystery is better, and suggestiveness is always pleasing.

Let the background set off the picture, not *be* the picture. Place on the screen behind the subject chosen a piece of material matching as nearly as possible the tone of the desired background; for all hues are modified by contrast, and the colour of the flower will present a different appearance according to its surroundings.

Keep your tints pure. Use enough brushes, and let those be large enough. Lose some of your little brushes. Your pictures will be better for it. Think constantly of the study as a whole, and try for general effect.

Study your shadow colours. Beginners are apt to intensify the local colour, and never see the shadowy tint, which is far more subtle.

Keep the edges soft; do not put a hard line around each petal and leaf. Paint shadows thinly; pile up high lights. Paint what you see. High light and deep shadow often obliterate both form and colour. Paint from dark to light; never lay on your lights first. Paint even a white flower all in shadowy grays first. Paint directly; do not dab around in blind faith that what you seek will somehow rise up and appear to you out of the chaos.

The following is a comprehensive palette for painting flowers in oil colours :—

- Silver White
- Yellow Ochre
- Pale Cadmium
- Deep Cadmium
- Orange Cadmium
- Lemon Yellow
- Naples Yellow
- Indian Yellow
- Chrome Yellow
- Light Red
- Vermilion
- Scarlet Vermilion
- Crimson Lake
- Madder Lake
- Cobalt
- Antwerp Blue
- Permanent Blue
- Mauve
- Zinober Green (Medium)
- " " (Dark)
- Terre Verte
- Emerald Green
- Raw Umber
- Burnt Umber
- Raw Sienna
- Burnt Sienna
- Bone Brown
- Brown Madder
- Vandyck Brown
- Neutral Tint
- Ivory Black
- Blue Black

The following general suggestions for colour combinations will be helpful to the beginner :—

White Flowers.— Lay in with a tone of gray, composed of Silver White, Cobalt, and a little Ivory Black, Yellow Ochre, and Light Red. Into this are painted the deep accents of shadow, for which you may use Madder Lake, Silver White, Raw Umber, Ivory Black, Cobalt, and Burnt Sienna. Afterwards put in the high lights with Silver White, Yellow Ochre, and a qualifying touch of Ivory Black.

Yellow Flowers.—Lay in with Cadmium mixed with Silver White and Ivory Black. Shade with Cadmium, Yellow Ochre, Raw Umber, Light Red, Ivory Black. Orange Cadmium may be used where a very deep yellow is required, and Medium Cadmium and Yellow Ochre, both in lights and shadows, where a medium tone is required. For shading very deep yellow flowers, add Burnt Sienna and Madder Lake to the palette.

Orange Flowers.—Cadmium Red, Cadmium Red and Burnt Sienna, touched with Brown Madder in the deepest parts.

Purple Flowers.—Lay in with a general tone of Madder Lake and Cobalt, and a little Silver White and Ivory Black, with the addition of Yellow Ochre for a warmer tone. For shading use the same colours, with the addition of Raw Umber or Burnt Sienna. Put in the high lights with Madder Lake, Cobalt, White, and a touch of Ivory Black.

Red Flowers.— Bright Scarlet flowers are painted with Vermilion, Madder Lake, Yellow Ochre, and White, with a qualifying touch of Ivory Black. Vary the proportions of Vermilion or Madder Lake, according to the tone required. Shade with Raw Umber, Light Red, Madder Lake, and Ivory Black, and a little Cobalt if necessary. For deep red flowers paint with Madder Lake, Ivory Black, Yellow Ochre, Vermilion, and White ; in the deeper shadows add Burnt Sienna or Indian Red. For cooler tones of red, Vermilion and Yellow Ochre may be omitted, and a little Cobalt may be added if required.

Blue Flowers.— For the general tone use Antwerp Blue or Permanent Blue. For a warm, greenish blue combine Antwerp Blue with Silver White, Light Cadmium, Raw Umber, Madder Lake, and Ivory Black ; add Burnt Sienna to these colours for shading. For a cool, purplish Blue combine Permanent Blue or Cobalt with White, a little Raw Umber, and Ivory Black ; for shading, add to these Madder Lake or Light Red.

II. A FIRST ATTEMPT—FIELD DAISIES.

The Marguerite, or Field Daisy, will be our first model. It is hardy enough not to fade quickly, and there is not too much in it to finish at one sitting.

Put two or three large marguerites in a vase tall enough, and with a mouth narrow enough, to hold them up near together in a graceful group. We will suppose that one nearly faces you, another is seen in profile looking up, and we see the back of the third. Place the vase of flowers on a table near a window. Let that window be the only light in the room. Do not select a window into which the sun is shining ; for while the sun beautifies everything it touches, it greatly increases the difficulties of the task, changes the colour and varies the light and shadows too rapidly. So we will choose a north window, or one into which the sun is not then shining.

Place behind the flowers for a background a piece of grayish-blue or greenish-gray paper, or

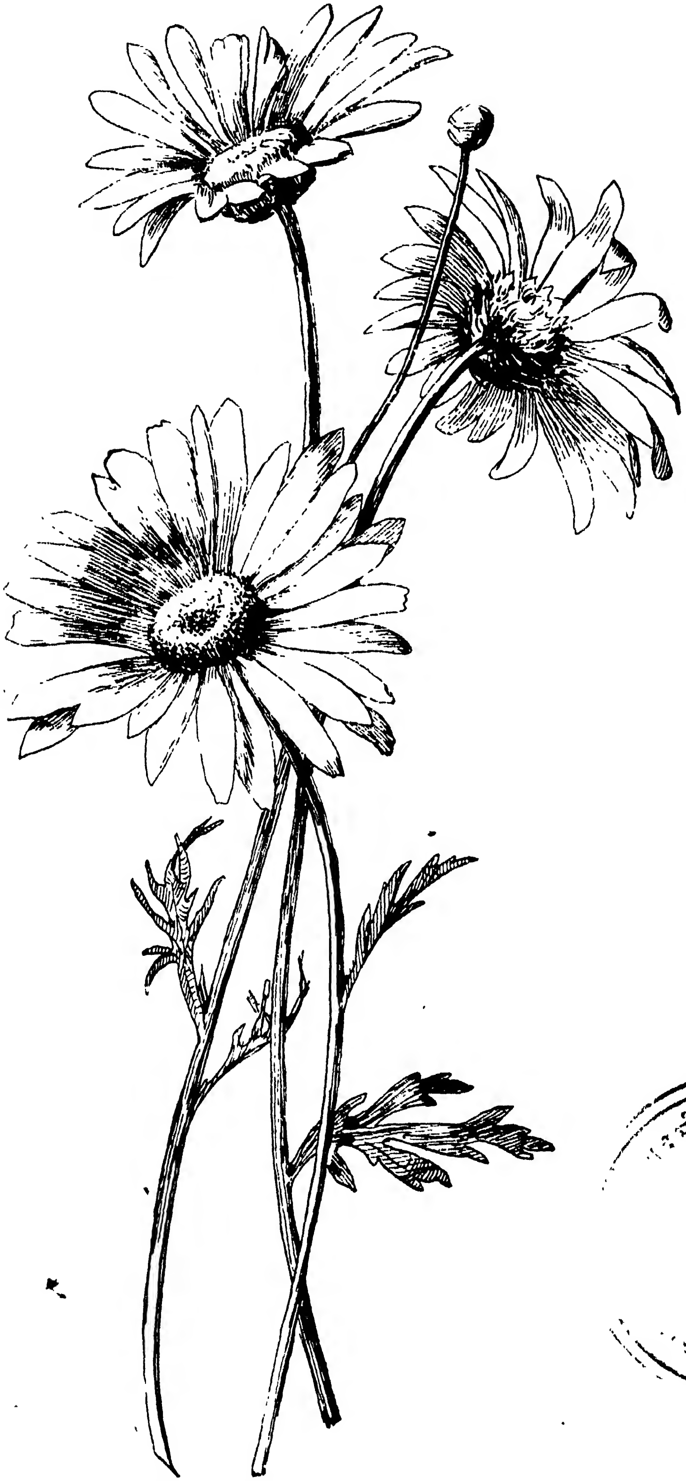


Fig. 117.—Study of Marguerites (Field Daisies).

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any surface that you see throws out the whiteness of the flowers, and yet is not too dark. A very dark or black background will not do for our purpose—the contrast would be too startling.

Provide Oil Sketching Paper, or a Birchmore Board. Set your palette with White, Lemon Yellow, Chrome Yellow, Pale Cadmium, Yellow Ochre, Raw Sienna, Madder Lake, Light Red, Burnt Sienna, Ivory Black, Vandyck Brown, Zinober Green, Medium and Dark, and Permanent Blue.

Have two pointed sable brushes—Nos. 5 and 8; some flat sable brushes—say, Nos. 4, 6 and 8, and two flat bristle brushes—Nos. 5 and 6.

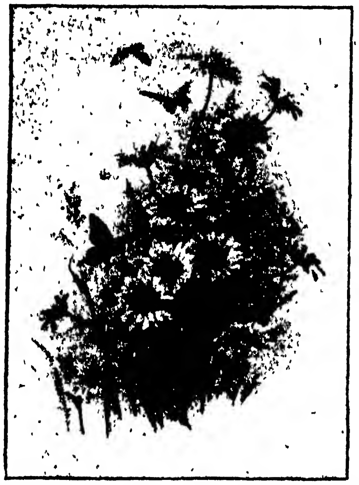


FIG. 118.—STUDY OF FIELD DAISIES AND BUTTERFLIES.

Draw lightly the centre of the first blossom and then the petals, then the other two. Draw one line each for the stems. Put in the background first, painting it the colour you see it. For this use the bristle brushes. Let the paint come quite up to the edge of the pencilled outline of the flower, or even over it a little. If the bristle brush is too large to go between the petals that are separated, use one of the flat sables. Put on the paint thick enough; make the touches decided and firm, with a full brush.

When the background is put in, begin on the petals of the flowers. Paint first the shadowed ones. Look well to see what the colour is. Sometimes there is a bluish tone in the gray; sometimes a purplish tint that suggests that Madder Lake might be mixed with blue and gray to make it; sometimes it is greenish. Whatever it is, paint it faithfully. Do not be afraid that it will be fantastic. Indeed, try and see as much colour in it as you can. You will not believe how much the shadow on every white flower varies from pure black-and-white gray until you observe carefully, and also observe in the paintings of others how they have produced the effect of white in shadow. Just black and white is apt to look lifeless and dull, and is untrue to nature generally; for the white flower receives its colour in shadow from the reflection of whatever surrounds it. Out of doors its colour is affected by the colour of the sky, by the reflection of foliage or buildings near it; in the house the walls and furniture lend it of their tint. Bring the red cover of a book beside the flower—it becomes almost red in sympathy, and all the other colours affect white in the same way.

In our model, the shadows of the flowers are greenish gray in the main. Sometimes, where they are quite dark, they are purplish in the middle of the first daisy; the shadow on the side next the light has a yellow reflection from the yellow centre. Having all the shadows in, paint the high lights. They are pure white in this flower; but pure white paint seems just here to look too blue and blank, so we will mix a faint trace of Chrome Yellow in the white on the palette. Paint the petals with the pointed sable brush full of paint, beginning at the tip and going toward the centre. If the whole petal is all of one colour, make it at one stroke; but if it changes its tint, stop just where the change begins, load your brush with the required new tint and finish the petal with it. If the change seems to you too abrupt, smooth out with your paint rag one of your flat sable brushes so that it is free of paint, and very softly drag it over the junction once. Do not attempt to mix the paint on your canvas; get it right on your palette, and do not worry the paint after it is once on, any more than you can possibly help.

Your method should be simple and decided and direct; but that it will be wholly so at first, of course, is very unlikely.

You will observe shadows in the daisy where one petal crosses another or where a petal is bent or curved; do not neglect these. Paint the centres with Chrome Yellow. The depression in the centre of the centre is greenish. Around it rises a rim that has white mixed with the yellow. To one side perhaps you will see a little Orange Cadmium; there is Raw Sienna, or Burnt Sienna and Green, in the very darkest shadow on the centre.

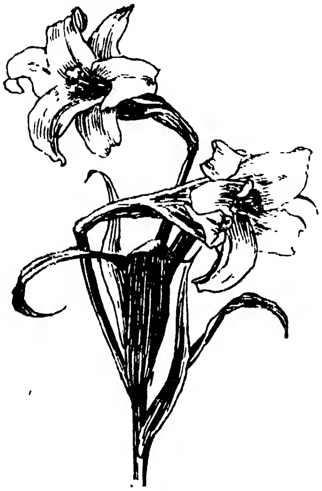


FIG. 119.—STALK OF LILIES.

Now we will paint the Green Stems. You will notice that green has a hundred tints, that vary with the amount of white, blue or yellow or brown it has in it. Find the true colour of the daisy stem in light; draw it steadily down; shade it with darker greens and browns where you see shadow, and put white touches (or nearly white) in the brightest places. The scaly sheath at the back of the flower has much the same colours as the stem. The lace-like green leaves we draw and paint at the same time over the background. They, too, have their lights and shadows that must not be neglected. The light may shine through a leaf somewhere; see how yellow the green is there.

It is done now, and it is a step—a great step—onward, this first study from nature.

III. PANSIES, DAFFODILS, TULIPS, PEONIES.

One sees many a Pansy painted that is only a fair representation of a pressed pansy, because the painter of it occupied himself solely with the purple spots and the yellow splashes, and did not notice in the abruptness of these changes that the yellow petal curved softly out of sight, or that the purple petal advanced some of its sombre folds into prominence.

A pansy of great simplicity is all purple. The upper large petals are of a lighter tint than the lower three, so where the light strikes that uplifted one it is of a light lilac colour. Madder Lake and Permanent Blue, with White, may be the colours employed. In the shadows no reflected tint from any surrounding object seems able to modify the strong, deep purple of its natural colour; so we will paint it with the blue and red just mentioned, without the White. We will put it on thickly, but if even then it will not grow dark enough, we will add a little black. One of the greatest charms of

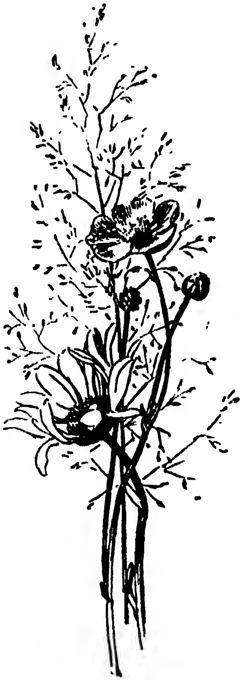


FIG. 120.—DAISY, BUTTERCUP, AND GRASS.

a dark purple pansy is its velvety texture. How is this made apparent to the eye? You see, on looking at the purple petal, that where it turns or bends there is a faint whitish bloom. It is whitest on the most prominent point, and fades gradually into the purple darkness of the local colour. Imitate this with an oil-thinned skim of white paint dragged lightly over the purple colour you have already painted. Do not let it mix with the purple, and do not have too much of it. The tender green stalk of the pansy is smooth and glistening; so note where the high light strikes it.

Purple Pansies may be painted with Madder Lake, Permanent Blue, White, and a very little Ivory Black for the local tones. Where the flowers are a very deep and rich purple omit both White and Yellow Ochre, and make the tone with Permanent Blue, Madder Lake, and either Ivory Black or Bone Brown. When such transparent colours are used it is advisable to mix with them a little Siccatif de Courtray, mixed with poppy oil, in the proportion of one drop of siccatif to five of oil.

Pale Yellow Pansies are painted with Light Cadmium, White, and a very little touch of Ivory Black for the local tone. In the shadows add a little Permanent Blue and Raw Umber.

Deep *Reddish-Yellow Pansies* may be painted with Yellow Ochre, White, Madder Lake, and a very little Ivory Black for the local tone. Add Burnt Sienna and Raw Umber in the shadows, and use when needed deep Yellow or Orange Cadmium. Paint the deepest tones of brownish red with Bone Brown and Madder Lake alone, using, to dry them, plenty of Siccatif de Courtray.

The Leaves are painted with Antwerp Blue, White, Cadmium, Madder Lake, and Ivory Black, tempered with Silver White. In the shadows add Burnt Sienna and Raw Umber.

Daffodils are bright warm yellow, or they are greenish. The leaves are green, usually of a silvery gray quality, although rather dark in tone. In the half-tints and high lights such leaves are almost blue. The whole plant growing in a pot might be taken as a model, the leaves and buds and blossoms arranged just as they grow, painted against some agreeable background. The single varieties of the daffodil will present fewer difficulties to the novice than the double flowers.

The background may be of a rather warm blue gray, light in the upper part and cloudy and gradually darkening toward the bottom. Paint this with Permanent Blue, White, Yellow Ochre, a little Ivory Black, and Madder Lake, adding in the deeper touches Burnt Sienna and Raw Umber. Add more White in the upper part, and use more Black, Blue, and Red in the deeper tones below.

The Blossoms.—For the blossoms lay in at first a general tone of light yellow qualified by gray. Make the shadows a deeper tone of yellow, but paint them in also very simply at first, leaving the darker touches and other details for a later painting. The colours needed for the local tone are Light Cadmium, White and a very little Ivory Black, with a touch of Vermilion. In the shadows add Burnt Sienna, Yellow Ochre, and Raw Umber. Paint the high lights with White and Light Cadmium, qualified by the smallest portion of Ivory Black.

For the green leaves use Permanent Blue, White, Light Cadmium, Madder Lake, and Ivory Black. In the shadows add Burnt Sienna and Raw Umber.

Tulips.—A warm gray background for a group of deep red and yellow tulips may be made of White, Yellow Ochre, Light Red, Raw Umber, and a little Ivory Black. For the deep red tulips use Madder Lake, Light Red, White, Yellow Ochre, and a very little Ivory Black for the first painting. Put the details in later, adding Raw Umber in the deeper shadows and Vermilion in the lights. The same colours are used for the red parts of the red and yellow tulips. The yellow shades are painted with Light Cadmium, White, a little Raw Umber, and a very little Ivory Black.

The Leaves may be painted with Antwerp Blue, White, Cadmium, Light Red, and Raw Umber, adding in the shadows Ivory Black with Madder Lake. In the lightest touches of both stems and leaves use only Light Cadmium, White a little Ivory Black, and a touch of Vermilion.

Peonies.—For the local tone of the *Red Peony* use a combination of Madder Lake, White, Yellow Ochre, and a little Ivory Black; add Raw Umber in the shadows, and Vermilion in the lights. *The White Peony* is laid in at first with a delicate local tone; add the deeper touches of shadow later, and load the high lights. The colours used are White, Yellow Ochre, Cobalt, a little Vermilion, and Ivory Black; in the shadows Madder Lake is substituted for Vermilion, and a little Light Red is added in parts. The brilliant colours of the centre are made with Cadmium, White, Vermilion, and Ivory Black; and touches of Madder Lake and Yellow Ochre are added in the deeper parts.

Paint the Leaves with Antwerp Blue, White, Cadmium, Burnt Sienna, and Ivory Black; add Madder Lake and Raw Umber in parts. For the stems use Bone Brown, Yellow Ochre, Permanent Blue, White, and Madder Lake.

IV. CARNATIONS, GERANIUMS, AZALEAS, WALLFLOWERS.

For *Red Carnations* use Madder Lake, Light Red, White and Ivory Black for the general tone. In the shadows add Burnt Sienna, and omit Light Red. The high lights are painted with White, Vermilion, Madder Lake, and Ivory Black. If needed, a little Yellow Ochre may be added.

The Green Calyx is a rather warm yellow-green at the top, but takes a cooler and more silvery quality below. To paint this green, use White, Light Cadmium, Antwerp Blue, Vermilion, and Ivory Black. In the shadows add Raw Umber and Burnt Sienna, omitting Vermilion. In the cooler tones use more Ivory Black and Vermilion, with less Cadmium.

The Background.—A tone of light, warm gray, which has rather a slate-blue quality, will set off well the rich red of the carnation. For this use White, Yellow Ochre, Permanent Blue, a little Madder Lake, Light Red, and Ivory Black. In parts use a little Raw Umber and omit the Yellow Ochre. Paint this somewhat loosely—not one hard tone all over.

For the shadows of *Yellow Carnations* use Raw Umber, Cobalt, and White. For the light parts take Lemon Yellow, adding a little White for the most brilliant lights. Paint the shadows thinly and load the lights on freely;

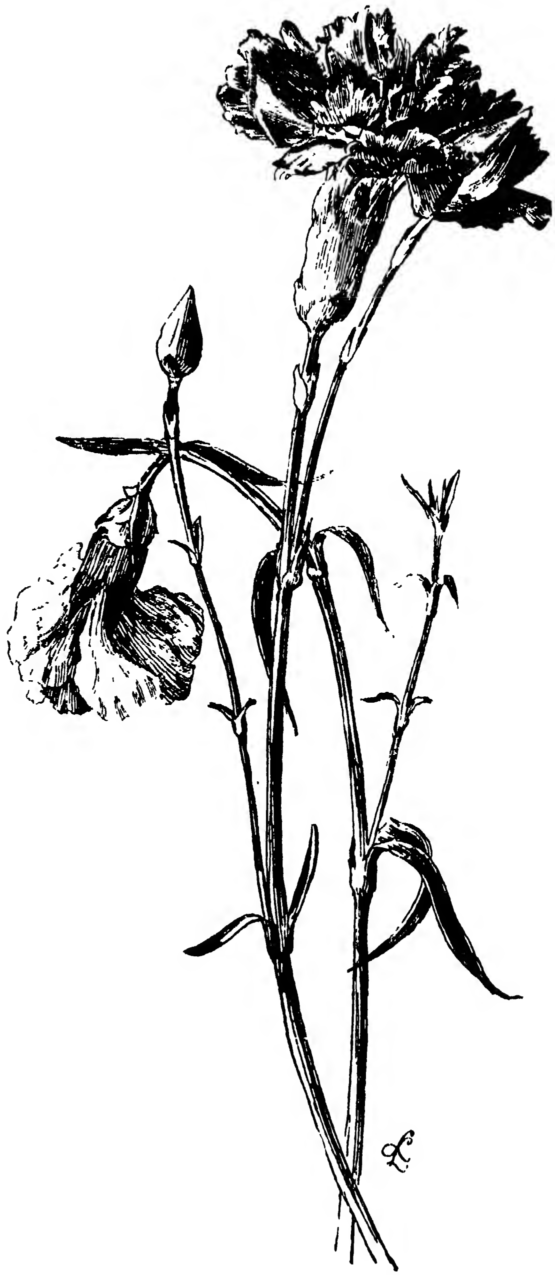


FIG. 121.—PINK CARNATIONS.

work a suspicion of Scarlet Vermilion into the shadows. When the painting is partially dry—that is to say, in a "tacky" condition—touch in the red markings crisply with Crimson Lake and Scarlet Vermilion mixed.

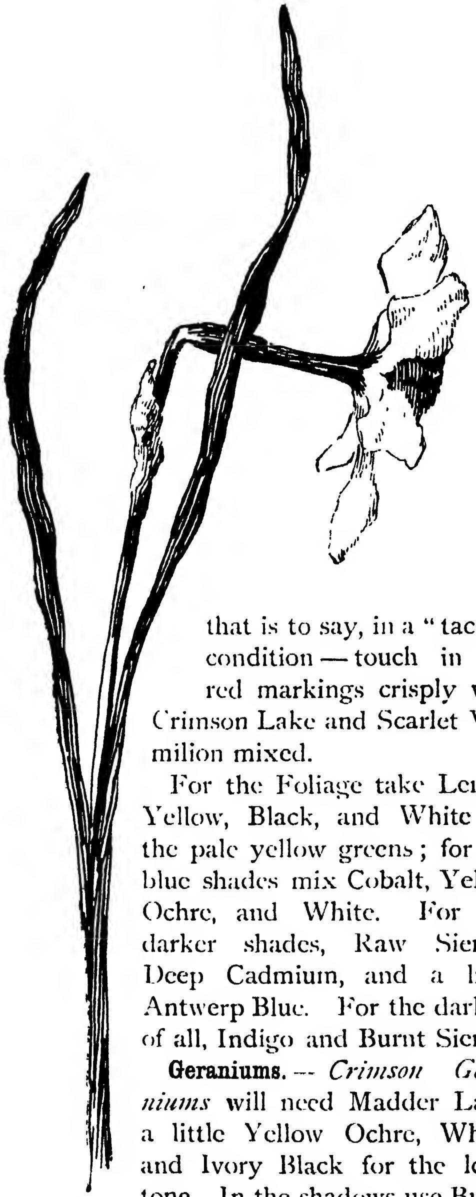


Fig. 122. Daffodil.

For the Foliage take Lemon Yellow, Black, and White for the pale yellow greens; for the blue shades mix Cobalt, Yellow Ochre, and White. For the darker shades, Raw Sienna, Deep Cadmium, and a little Antwerp Blue. For the darkest of all, Indigo and Burnt Sienna.

Geraniums.—*Crimson Geraniums* will need Madder Lake, a little Yellow Ochre, White, and Ivory Black for the local tone. In the shadows use Burnt Sienna, Madder Lake, a little Ivory Black, and White, if needed. A little Cobalt or Permanent Blue may be added in the half-tints and where any blue-gray tones appear.

Scarlet Geraniums must be kept pure and brilliant in colour; lay these in with a bright tone of red, made from Vermilion, Madder Lake, Yellow Ochre, White, and a little Ivory Black. For the shadows use Raw Umber and Madder Lake. Touch in the high lights with a pure tint made from Vermilion, White, and a little Cadmium. In the half-tints a very little Cobalt may be added to the White, Madder Lake, and Black.

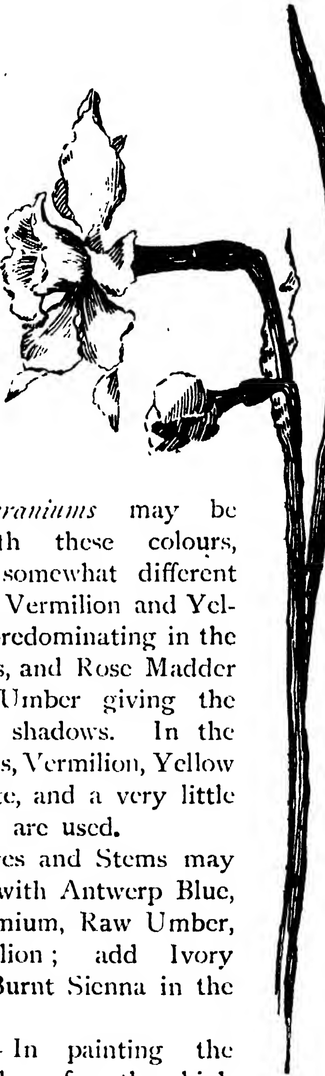


Fig. 123. Daffodil.

Pink Geraniums may be treated with these colours, though in somewhat different proportions, Vermilion and Yellow Ochre predominating in the lighter parts, and Rose Madder with Raw Umber giving the key to the shadows. In the highest lights, Vermilion, Yellow Ochre, White, and a very little Ivory Black are used.

The Leaves and Stems may be painted with Antwerp Blue, White, Cadmium, Raw Umber, and Vermilion; add Ivory Black and Burnt Sienna in the shadows.

Azaleas.—In painting the White Azalea, for the high lights load on the colour freely. The general tone of the background may suggest the sky, and be made with Cobalt Blue, modified with Ivory Black, and perhaps a touch of Yellow Ochre. For the dark shades use Cobalt, Venetian Red, Black, and Yellow Ochre. The warm yellow tones will require a little Cadmium and Madder Lake. To take off the crudeness of the white paint, and yet retain the cold, dead white of the flowers, mix with the Silver White a little Madder Lake; not enough to tinge it, but only to take off the rawness. Put in the shadows of the flowers with Cobalt Blue and Yellow Ochre, mixed in varying proportions. In the darkest parts substitute Raw Umber for Yellow Ochre. For the touches of yellow on the flowers take pale Lemon Yellow. For the foliage use Yellow Ochre, Antwerp Blue, Raw Sienna, Raw Umber, Lemon Yellow, Black, and Madder Lake.

Wallflowers.—A warm grayish-green background harmonises with these rich, sombre-hued flowers. Combine for it: White, a little Pale Cadmium, with a very little Madder Lake and a little Ivory Black, deepening these tones in the shadows. For the foreground the same colours are used, with the addition of a little Yellow Ochre and Raw Umber, respectively, in the lights and shadows.

The warm reddish petals are painted with Madder Lake, Light Red, Yellow Ochre, and a little Raw Umber, for the general tones. Where the reds fall in shadow, and also in those parts where a deeper and richer colour is seen, use Madder Lake, Burnt Sienna, and Ivory Black. The yellow markings at the base of the petals are painted with Medium Cadmium, White, a very little Vermilion, and a little Raw Umber. The greenish-red buds are painted with Madder Lake, Raw Umber, a little White, and in parts a touch of Deep Cadmium.

For the Leaves, mix a general grayish-green tone with Antwerp Blue, White, Cadmium, Ivory Black, and Burnt Sienna. In painting the stems, mix Bone Brown with Antwerp Blue, Cadmium, and Madder Lake, adding Yellow Ochre and White where the lights occur. In finishing, use a small, pointed sable brush, to define the petals and to secure a correct and delicate outline for the stems and pointed leaves.

V. ROSES.

It is best at first to avoid roses that are not fully blown, as their gradual unfolding so changes the positions of their petals and the lights and shadows appertaining to them as to embarrass the student, unless he works very rapidly. Let your first study be very simple. About three roses may be placed upon a horizontal surface, where they will get a little strong light and plenty of shade. We will suppose that they are pink—the flesh-pink Catherine Mermets are very desirable. Throw in some consistent background tints, bringing them up around the mass with thin, broken strokes, roughly indicating its form and giving it relief. A little encroaching upon the outlines which the roses and leaves are to assume will do no harm, but rather insure softness, if only the colour is kept so thin that there is little left to be taken up by the rose tints when they are introduced Plenty of the background colour must be held in reserve, to carry out in finishing, and to touch in wherever it may be needed as the study advances.

The leaves must be treated with freedom, not minutely notched and veined, though here and there a margin may demand the easy notching that may be given with a large brush; and we want whatever there may be of light, shadow, and half-tint deftly touched in between the veins, rather than the veins themselves.

La France, Catherine Mermets, etc.—For the delicate tone of a pink rose use Vermilion, White, Madder Lake, Yellow Ochre, and a very little Ivory Black, for the lightest tones. In the half-tints add a little Cobalt and Light Red to the colours already named, and in the shadows use Raw Umber and a touch of Medium Cadmium, Burnt Sienna, Ivory Black, and Madder Lake, with whatever White is needed. Observe carefully the reflected lights, which are warm in quality and much lower in tone than the high lights. Paint them with Light Red, Yellow Ochre, Madder Lake, and Raw Umber, qualified by White and a little Ivory Black.

The leaves are soft green, rather warm in tone, merging into delicate red at the tips, and with little touches of red in the veins and serrations. For the general green tone of the leaves, use Antwerp Blue, White, Cadmium, and Vermilion, qualified by Ivory Black. In the under part of the leaves, and all cooler tones, substitute Madder Lake for Vermilion. In the shadows substitute Burnt Sienna, and add Raw Umber. Use Madder Lake, Black and Yellow Ochre, with White for the tips of the leaves and red accents.

The Stems, which are lighter and warmer than the leaves, may be painted with Light Zinober Green, White, Light Cadmium, Vermilion, and Ivory Black.

Jacqueminot Roses.—A greenish-gray background will be harmonious. For the general tone use White, Permanent Blue, Yellow Ochre, Vermilion, and Ivory Black, adding a little Light Cadmium and Raw Umber in the greener touches. Observe that the tones in front are much lighter than those behind the flowers, and where the shadows fall beneath the leaves the colour becomes warmer ; add here Burnt Sienna to the local tone, and use less White.

For the local tone of the roses use Madder Lake, White, Yellow Ochre, Light Red, and Ivory Black. In the shadows, use Madder Lake, Bone Brown, and a little Cobalt. In the high lights, mix White, Vermilion, Madder Lake, a very little Light Cadmium, and a small quantity of Ivory Black. It is necessary to use the Ivory Black with great caution, as too much will give an inky effect to the colouring. In some of the cool bluish reflected lights, a very little Cobalt may be added. If the colour of the roses does not appear to be rich enough when first painted, a glaze of Madder Lake may be rubbed over the blossoms, and the high lights and deepest shadows repainted into this. Remember to mix a few drops of Siccatif with the oil in glazing, to dry the Lake quickly ; also be careful not to add too much of this drier, as it would then be liable to crack the paint.

The Leaves.—For the local tone of the green leaves use Antwerp Blue, White, Light Cadmium, Madder Lake, and Ivory Black. Substitute Vermilion for Madder Lake in the high lights, and for the shadows use Burnt Sienna, with Raw Umber added to Antwerp Blue, Cadmium, and Ivory Black. Where sharp outlines occur in stems or leaves, draw them carefully, using flat-pointed sables for the purpose.

Purplish Roses.—The colours in oil for such roses as the "Duke of Edinburgh," "Sultan of Zanzibar," and "Sultan of Morocco," are the same in name as those used for these flowers in water colours (see p. 78).

Many amateurs have trouble in obtaining the deepest rose red. This is not always because they make an unfortunate choice of colour, but because they manipulate the colour too much, and thereby destroy all freshness and richness. Especially is this manipulation fatal if kept up after the opaque tints are introduced. Lights and gray tones must not be carried into parts that want transparent colours only. To bring the gray tones into proper juxtaposition with the brilliant colour, so as to make it show to advantage, instead of blending them with it and neutralising the effect—this is what many students seem to find most difficult to learn.

Yellow Roses may be painted on the same principle, very thin Indian Yellow or Light Cadmium being used first to mass in the forms. The ordinary prepared Neutral Tint, which is always very purplish, will produce a gray when laid upon yellow, corresponding to the gray that Terre Verte produces when laid upon pink. Umbers and browns are used in shadows where black would produce too much green.

Tea Roses.—The general tone may be laid in with Light Cadmium. For the shadows use with the latter Raw Umber, and touch the warmest parts with the merest suggestion of Burnt Sienna, and with Madder Lake. The half-tones are grayish, for which use with the Light Cadmium, White, and a little Black. For the high lights use White and Lemon Yellow, enriched with a touch of Cadmium.

The Leaves and stems incline to gray. Use Zinober Green (dark), with Black, Cadmium, Yellow, and White. For the shadows, Burnt Sienna, cooled with Cobalt Blue near the lights.

Maréchal Neil Roses should be painted in first with Lemon Yellow; then warmer yellows, cool grays, and white slightly tinted with pink, if applied as respectively called for, will develop the petals.

Bride Roses are the most perfectly pure white roses imaginable, yet in painting them, sufficient warmth must be introduced into the shadows and reflected lights to avoid giving them too much of a gray effect. For the local tone a very pale, delicate gray is laid in, and the colours needed are White, Light Cadmium, a very little Vermilion, and a very little Ivory Black, with perhaps the least touch of Cobalt added in the half-tints. In the shadows use Raw Umber, Yellow Ochre, Madder Lake, and a very little Ivory Black. Light Cadmium and Cobalt, with White and Light Red, give the delicate tones near the centre and where the white petals are attached to the calyx. The leaves are painted with Light Zinober Green, qualified by Madder Lake, White, and Ivory Black. Raw Umber and Burnt Sienna are added in the shadows, with also a little Antwerp Blue where a deeper green is needed.

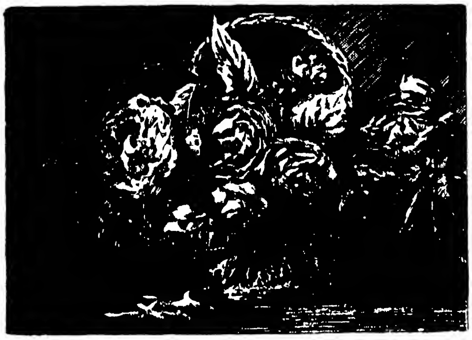


Fig. 124.—Still-life Study. A Basket of Roses.

Leaves and Stems.—In the very light green leaves and stems Light Cadmium is used, with the colours given for the leaves. The colours used in painting the stems are Raw Umber, Yellow Ochre, Antwerp Blue, Madder Lake, and Ivory Black. In the lighter parts substitute Cadmium for Yellow Ochre.

VI. LILIES.—CONVOLVULI.—SWEET PEAS.

Hitherto we have considered the painting of leaves, and of nearly flat single blossoms of various colours, but simple in form. We will now consider the painting of hollow, cup-like blossoms. The lily-of-the-valley presents the problems of this lesson in miniature. It is far from being an easy model. To hold a quantity of the lilies in your hand, to revel in their fragrance, is delightful; but to paint them in a bunch would be to hide in the mass their chief charm, which is their grace. Rather pose them singly, or throw a few stems of bloom loosely together with some of the fresh green leaves. You must place yourself nearer to your

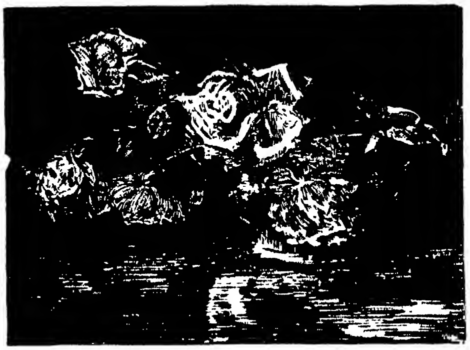


Fig. 125.—Still-life Study. Pink Roses in Old Blue and White Bowl, with Reflections on the Polished Table.

The light is from the left.

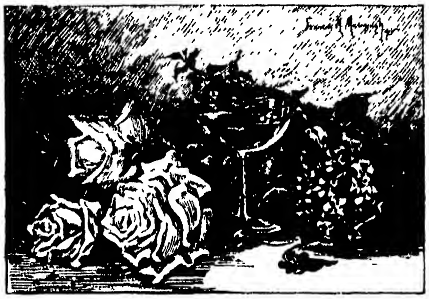


Fig. 126.—Still-life Study. Yellow Roses, Purple Violets, and Glass of Champagne.

The background is greenish gray, the foreground is light yellowish gray. The high lights of the glass and the sparkling bubbles of the wine must be carefully noted.

model than you have done with larger flowers, and use smaller brushes. We will suppose the background to be rather light.

The drawing must be accurate, the painting minute but forceful and decided. Each cup must receive its due share of attention as to its form and modelling. Each cup is a little different from its fellows, owing to some accident of position or some reflection from a near blossom or leaf. It has a white lighted portion, a shadowed side which is not black, and for which the flower alone can give you a recipe. And each cup has, perhaps, reflected lights. If you look squarely into the face of one of the shy little bells you see that it is not so dark in there, but yet your eye is informed that it recedes. Study how this hollowness is conveyed to your mind, by what intensity, tint and form of shadow, and try the painting of this spray of whiteness until you can hold your study at arm's length from you and close to the model blossom; half shut your eyes, and see that it looks as near the living reality as paint can make it. It may be that your painted blossoms look muddy or dirty in colour compared to nature. Discover the cause and correct it. It is possible that you have mixed the white into the shadows until none of it is pure, or put too much black or brown into the shadows, or left the shadows so light and timid that the whiteness of the white does not show for want of a proper contrast. The stems with all their small perfections of shining green curves must not be neglected, nor must the leaves be forgotten.

Water-Lilies.—Arrange these flowers so as to exhibit their coolness and purity. Where they grow naturally, the dark reflections and shadows in the water near them set off the whiteness of the blossoms, as do also the dark green of the flowers' own broad, restful leaves and the shadowed background. Arranged in a glass bowl, through which the stems are seen in the water, water-lilies afford a charming subject for the painter.

The golden stamens and green and brown sepals save the water-lily from being colourless. Express by your painting of the white, smooth petals the waxy texture that is one of their characteristic charms.

For a Background use a warm gray made of Raw Umber, Yellow Ochre, a little Burnt Sienna, and very little Ivory Black.

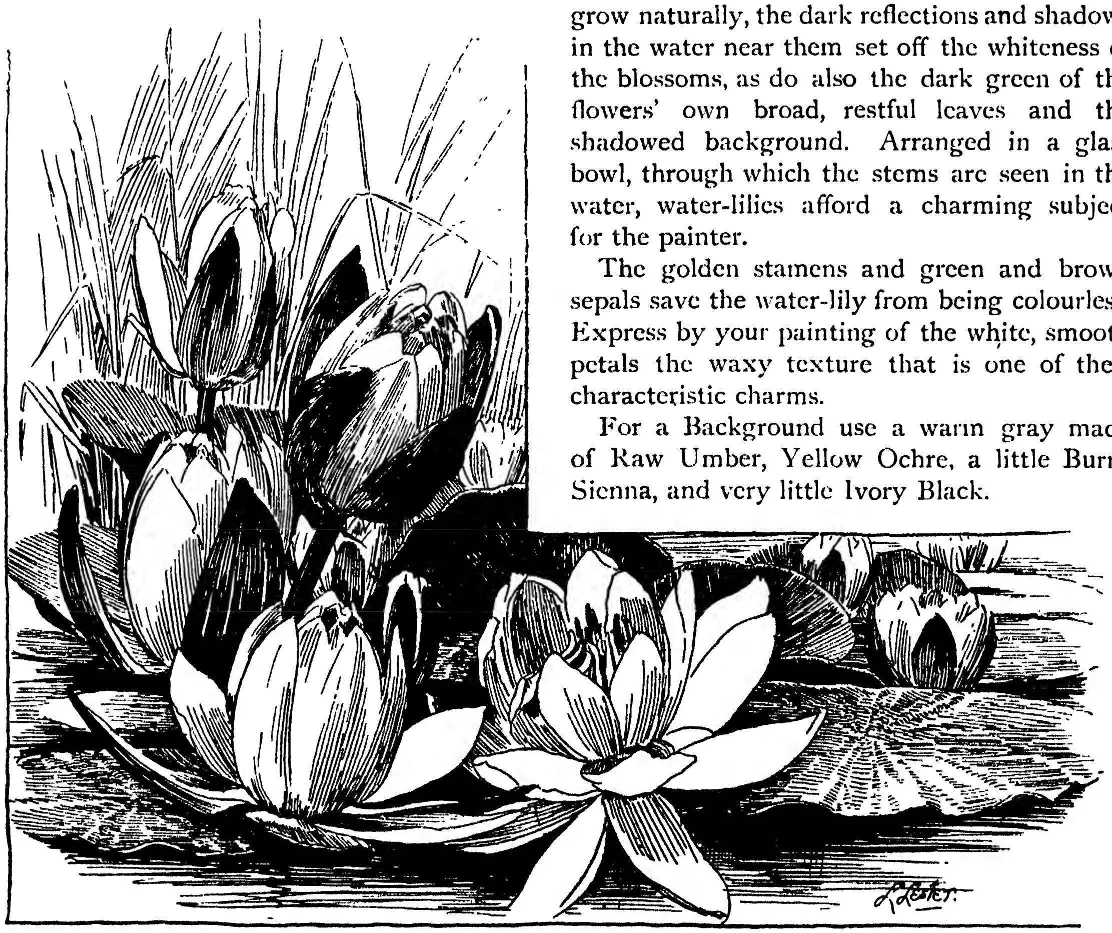


Fig. 127.—Study of Water-Lilies, by L. Lester.

Paint the white lilies at first with a general tone of light, general gray, made of White, Yellow Ochre, a little Permanent Blue, Madder Lake, and a very little Ivory Black. Paint the high lights with Silver White qualified with the least touch of Yellow Ochre and Ivory Black. A touch, occasionally, of the pure white may be put on with a small-pointed brush. For the yellow centres use Light Cadmium and White, shaded with Raw Umber and Light Red. In the shadows of the white lilies use the same colours given for the local tone, but in different proportions: less White and more Madder Lake, with Raw Umber.

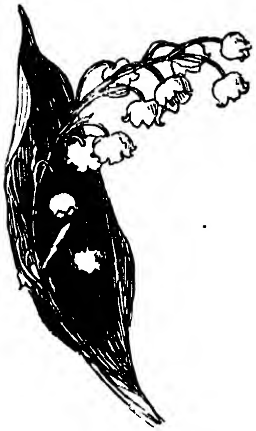


FIG. 128.—LILY-OF-THE-VALLEY.

For the Green Buds and Leaves use Light Cadmium, White, a little Antwerp Blue, Vermilion, and Ivory Black. For the stems use Raw Umber, Light Red, and Ivory Black, adding Yellow Ochre and a little White in the high lights.

Purplish-Pink Convolvulus.—Block in the shadows with a warm gray made by mixing Cobalt, Scarlet Vermilion, and White, with the addition of a touch of Ivory Black, if found necessary, for the darkest parts. The local colour can be made by mixing Scarlet Vermilion and White. Bear in mind that Vermilion and Scarlet Vermilion are not the same colour. For the purplish tones touch in with Madder Lake. The yellow-green shades for the heart of the flower are made with pale Lemon Yellow and Ivory Black mixed. This mixture will also serve for the light yellow-green tints on the foliage; the grayer tones should be painted with Cobalt, Yellow Ochre, and White mixed.

The leaves are shaded with Raw Sienna pure, and also mixed in parts with Antwerp Blue and Chrome Yellow.

Sweet Peas.—For the purple petals of sweet peas use Madder Lake, White, Permanent Blue, and a very little Cobalt. The pink petals are deeper in colour at the centre, and grow lighter at the edges. For these use Madder Lake, White, a little Yellow Ochre, and a very little Raw Umber for the local tone. In the high lights substitute Light Cadmium for Yellow Ochre, and omit Raw Umber. The deeper touches of shadow will need a very little Ivory Black and Madder Lake. To paint the

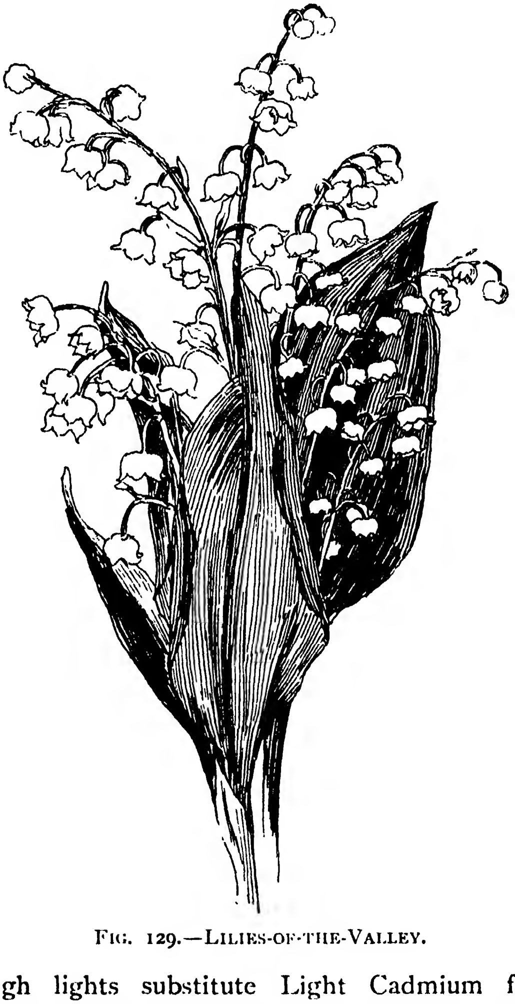


FIG. 129.—LILIES-OF-THE-VALLEY.

white petals, lay in at first a general tone of light delicate gray, adding the high lights and deeper shadows later. For this gray tone use White, Yellow Ochre, a little Permanent Blue, and a very little Ivory Black. In the deeper touches of shadow add a little Ivory Black and Burnt Sienna. The high lights are painted last of all. For these use White, a little Light Cadmium, and the least touch of Ivory Black, to prevent crudeness. The yellow petals are painted with Light Cadmium, White, and a very little Raw Umber for the local tone, adding a little Ivory Black, Yellow Ochre, and, if necessary, some Light Red in the shadows.

The red flowers are painted with Vermilion, Madder Lake, White, and a little Raw Umber for the local tone; in the shadows add Light Red and a very little Ivory Black. Also, in the deeper touches, substitute Burnt Sienna for Light Red. Where the yellow stamens are seen use a little Light Cadmium and White, qualified by a very little Ivory Black. In the high lights use Vermilion, White, a little Yellow Ochre, and Madder Lake qualified by a very small quantity of Ivory Black.

For the Leaves use Antwerp Blue, White, a little Cadmium, Vermilion, and Ivory Black. In the shadows add Burnt Sienna and Raw Umber, omitting Vermilion. The little pale green tendrils are painted with Light Cadmium, White, a touch of Vermilion, and the least quantity of Ivory Black, to prevent crudeness.

Pink Gladioli may be painted with White, a little Yellow Ochre, Madder Lake, and Light Red and a very little Ivory Black. In the deeper touches, beneath the edges of the petals, use Madder Lake and Raw Umber, accented with Burnt Sienna and Ivory Black.

Salmon or Yellow-pink Gladioli.—Use Vermilion, White, Yellow Ochre, Light Red, and a little Raw Umber; in the shadows add Ivory Black, and for the blue-gray half-tints use a little Permanent Blue, with White, Yellow Ochre, Light Red and a very little Ivory Black.

Paint the green leaves with Antwerp Blue, White, Light Cadmium, Vermilion, and Ivory Black, adding Burnt Sienna and Raw Umber in the shadows.

VII. CLUSTERED SMALL FLOWERS.

The Guelder Rose—or snowball, as it is sometimes called—offers us, as do the other clustered small flowers, another class of problems, different from those that the roses and such double flowers afford. It is the best to study first, of the flowers of this sort, because it is the easiest. One reason that it is not difficult to represent is that the shape of the bunches of blossoms is regular and globular, and another reason is that the individual blossoms are simple and flat.

The Guelder Rose is of a delicate greenish white in the centre, although the local tone of the white flowers is rather warm. An appropriate background is light, greenish gray, with suggestions of purple in the shadows. Use for this Permanent Blue, White, Yellow Ochre, Raw Umber, Light Red, and Ivory Black. Add Madder Lake in the darker and cooler tones.

The Flowers should be painted in at first in general masses of light and shade, without much regard to the actual details of the flowers which form each ball. It is, however, very important that the forms of the shadows should be carefully observed where they meet the lights, as this indicates the character of the blossoms.

Do not put in the highest lights or darkest shadows in the first painting: leave these with other details to be added later, after the general effect of colour, form, and proportion is secured.

The colours needed are White, Yellow Ochre, a little Cobalt, Madder Lake, and a very little Ivory Black. With these make a delicate gray for the light masses; this will form the general half-tint. In the shadows use the same colours, but with less White and more Ivory Black; add also Burnt Sienna. Paint the highest lights with White, a little Yellow Ochre, adding perhaps the least quantity of Ivory Black to qualify the crudeness. In the centre a little Light Cadmium may be substituted for Yellow Ochre.

The Leaves of the Guelder Rose are rather warm in quality, but of a medium shade, having suggestions of purple at the tips in parts. Use Antwerp Blue, White, Light Cadmium, Madder

Lake, and Ivory Black. In the shadows add Burnt Sienna.

The Stems are painted with Raw Umber, White, Madder Lake, and Yellow Ochre, adding Burnt Sienna and a little Permanent Blue in the shadows.

Hydrangeas are much like guelder roses to paint, and they make an even more agreeable study on account of the gradual advance of the clusters of blossoms from white or green to a rosy pink. A variety of the hydrangea, much seen, is of a soft pale blue tint, very delicate in colour and largely qualified by grays. At the edges of some of the petals there is a faint pinkish tone. The leaves are a rather dark, cool green ; the stems are of a lighter, warmer quality of colour.

An effective background would be a tone of rich deep amber, almost brown in the darker shadows, but gray in quality throughout. Use Yellow Ochre, White, a very little Ivory Black, Burnt Sienna, Raw Umber, and a little Permanent Blue, and for the deeper touches very little or no White, and more Ivory Black, Burnt Sienna, and Permanent Blue. In the lighter portions at the top add a little Cadmium to the local tone and omit Raw Umber.

The delicate blue of the hydrangeas is painted with Permanent Blue or Cobalt, White, a little Yellow Ochre, a little Madder Lake, and a very little Ivory Black. In the shadows add Raw Umber and Light Red. In the deepest touches of shadow beneath the petals use Burnt Sienna, Permanent Blue, and Ivory Black. In the sharp, fine, dark accents, not so deep as those just described, use Madder Lake and Raw Umber with a little Permanent Blue. Where the pinkish tones are seen on the edges of some of the petals use a little Madder Lake, White, Cobalt, Yellow Ochre, and the smallest quantity of Ivory Black.

The Leaves are painted with Antwerp Blue, White, Cadmium, Madder Lake, and Ivory Black, with Burnt Sienna and Raw Umber in the shadows. When painting the Stems add more Cadmium and White, and substitute Vermilion for Madder Lake.

The Stamens in the centre of the small flowers are painted with Cadmium, White, Vermilion, and a very little Ivory Black, with Raw Umber and Madder Lake in the deeper touches.

Lilacs.—The form of the bunches is not nearly so regular as in the case of the guelder rose, and in the purple lilac there is great variety of colour, ranging from the rosy buds to the full violet of the blossoms. The blossoms, too, are set loosely, not in a solid head as are those of the guelder rose and the hydrangea.

A warm grayish background sets off lilacs very well. For this, combine White, Yellow Ochre, Permanent Blue, Raw Umber, and Light Red. In parts a touch of Ivory Black will be needed.

For the *Purple Blossoms*, mix a delicate tone representing the medium tint of lilac, and add to this more or less red or blue, as may be required : the colours for this are Permanent Blue, White, Madder Lake, a little Yellow Ochre, and a very little Ivory Black ; in the shadows add Raw Umber and Burnt Sienna. Observe that the tips of the purple bunches are distinctly reddish, while those of the white lilacs are quite green.

For the *White Blossoms*, the same colours may be used as have been given for the background, with the addition of Madder Lake in the cooler shadows, and the omission of Light Red.

The Leaves may be painted with Antwerp Blue, White, Cadmium, Vermilion, Raw Umber, and Ivory Black. In the local tone, Burnt Sienna is added in the shadows. For the Stems use Raw Umber, Bone Brown, Burnt Sienna, Cobalt, and a little Madder Lake in parts.

Wistaria, with its grape-like bunches of pale lilac flowers, affords a beautiful object of study. Use for the general tone Permanent Blue, White, Madder Lake, a little Raw Umber, Yellow Ochre, and Ivory Black ; in the shadows, Permanent Blue, Yellow Ochre, Light Red, Raw Umber, Madder Lake, and Ivory Black. In the very deep side accents of dark, use Burnt Sienna instead of Light Red, and omit the Raw Umber and Yellow Ochre. The high lights should be painted with

Cobalt or Permanent Blue, White, Madder Lake, Yellow Ochre, and a very little Ivory Black.

For the Leaves use Antwerp Blue, White, Cadmium, Vermilion, and Ivory Black. In the shadows, use Cadmium, Raw Umber, Antwerp Blue, White, Burnt Sienna, and Ivory Black. For the reddish touches seen in young leaves, use Madder Lake in place of Burnt Sienna, and for the stems the same colours given for the leaves, varying the proportion when necessary.

The blossoms of the rhododendron also afford capital practice. With all these clustered small flowers, it is only by painting them yourself from nature that you can arrive at the important knowledge of how to give sufficient detail to each individual flower and yet not be over-elaborate. Constantly compare the relative importance of the lights and shadows of the one blossom you happen to be engaged upon with the masses of light and shade in the others.

VIII. POPPIES.—HOLLYHOCKS.—NASTURTIUMS.

The Field Poppy is of a deep red intensity and glow that one sometimes finds impossible to represent adequately with artists' pigments.

Select some Background that holds the colours complementary to those of the blossoms. The foliage of the poppy furnishes these admirably ; it is of a bluish green with a down of hairs all over the stems and leaves that enhances the silvery effect. Out of doors, as poppies grow, there are the brown earth, and the blue distance, and the brown and yellow lower leaves and grasses, and the harmonising light of the sun, to reconcile us to the vivid contrasts made by these gorgeous flowers. Let each of these accompanying colours have an influence in the broken tones of your background and let the poppies stand as if growing up from the lower edge of the canvas; for they are essentially of a wild disposition.

If you would paint them indoors, gather the blossoms early, before the sun has shone upon them.

Have in your composition some of the bending buds and straight standing seed pods and the deeply notched leaves. Draw the blossom with all its waves and crimples of silken ruffles upborne upon its supple stem, rising like a rocket, and, after painting all else, paint the flower—if it is of poppy-red—with Vermilion. Use Vermilion and White, or a pink with yellow in it, in the high lights, and Vermilion only in the shadows.

This is not the colour we see there in the blossom ; it is even painful to record such falsities. But this is not the end. Wait until the Vermilion is dry. Put the painting where the sun will shine upon the back of it and the wind blow upon it to hasten the process.

We have not mixed any oil with the Vermilion—unless, perhaps, it was a drying oil—and we laid on our colour thin and smooth. When it is dry, paint the poppy upon it, glazing the Vermilion with Madder Lake to imitate, if you can, the glowing red of nature, or, in richer depths, using Crimson Lake. There may be places of warm, reflected light where the Vermilion should be left as it is. The shining petals reflect the light in places so sharply that skims of white paint are needed. There are entirely black spots at the base of each petal that are to be seen from the back of the flower ; the stamens and seed pod of the centres are black and olive green generally, but sometimes they are purple.

In the shadows, use Madder Lake and Raw Umber, with a little Burnt Sienna and Black in the deepest touches.

The centres of the scarlet and pink poppies are lighter as the flowers are lighter, until they are a very light green indeed with the white poppy. These lighter poppies are painted as other pink and white flowers are, and call for nothing unusual in their treatment except the recognition of their extremely silken texture. To represent this look of silkiness, observe what there is in the appearance of the flower that makes it known to your eyes, and in your painting imitate that. There is an abrupt and crisp change from light to shadow in silk, satin, and poppy petals, and a shine in the high lights.

The Leaves.—The pale, soft gray greens are painted with Permanent Blue, Light Cadmium, White, Madder Lake, and Black, with the addition of Raw Umber and Burnt Sienna in the shadows, with less White. Where touches of warmer green are needed, substitute Antwerp Blue for Permanent Blue.

Hollyhocks.—The painting of hollyhocks has many things in common with that of its midsummer contemporary, the poppy. They have this great advantage over poppies as a subject for a picture—they grow in masses and need no artificial arranging to avoid being isolated spots of colour upon the canvas. They have to be painted largely, and must be posed at a distance, so that you can take in the whole plant, from the ornamental base, formed by the lower clump of leaves, to the top of the tall spires of buds. Their texture, too, is silken, and they ought not to be blocked out so roughly as to suggest that the petals of hollyhocks are thick and, perhaps, made of putty or clay.

Nasturtiums, tastefully arranged, make beautiful studies. Their glowing yellow, orange, and vermilion call for all those tints on the palette; but do not forget in the riot of colour their shadows and half-tints, or the result will be crude and garish. In arranging them to paint do not let all be so brilliant and in such full light that none will especially please or attract.

The colour of a certain red blossom can be approached most nearly by painting an undertint of orange or vermilion and, after allowing these colours to dry, glazing them with Madder Lake. Such a course always has the drawback that the flower may fade before the painting of it can be resumed, and a flower exactly like the first model may not be found again.

Red Nasturtiums.—Mix a general tint of rich, warm red, using Madder Lake, White, Yellow Ochre, a little Ivory Black, and Raw Umber. In the shadows use less White and Yellow Ochre, and add Bone Brown. Where richer touches of reflected light occur use Deep Cadmium in place of Yellow Ochre. Paint the high lights with Madder Lake, Vermilion, Yellow Ochre, and a little Ivory Black. In the centre parts the filaments are painted with Bone Brown, Yellow Ochre, a little Cobalt, and White. The stamens are put in with a fine-pointed sable, with a mixture of Deep Cadmium, White, Raw Umber, and a little Madder Lake.

Yellow Nasturtiums.—For these mix a local tint with Cadmium, White, a little Vermilion, and a little Ivory Black. Paint the shadows with Yellow Ochre, Raw Umber, a little Burnt Sienna, and a very little Madder Lake. Add Ivory Black in parts, especially the half-tints. Paint the red streaks at the base of each petal with Raw Umber, Madder Lake, a little White, and Yellow Ochre. In the highest lights a little Vermilion may be used with the other reds.

The Green Leaves, which are rather blue gray in quality, are painted with Permanent Blue, Cadmium, White, Raw Umber, Madder Lake, and a little Ivory Black. In the shadows add Burnt Sienna and use very little White. The stems are painted with the same colours, with the addition of Bone Brown in the shadows. Draw these carefully with a small-pointed sable brush.

IX. CHRYSANTHEMUMS.—DAHLIAS.—ASTERS.

The Chrysanthemum's doubleness is different from that of the rose and the double poppy. Its petals are so small and fringy that they almost come under the same sort of treatment as we suggested for the clustered flowers; but still, not quite. Indeed, they are of a type different from all the flowers we have hitherto studied, and they represent a large class, such as the garden asters, the zinnias, and the double dahlias.

Select for your models flowers whose colours harmonise with each other, for such a variety of colour and of modifications of colour have been evolved from this "flower of gold," that it is very possible to collect a frightful discord. The white and pink varieties together are in accord. Some of the pink kind go by gentle gradations of mauves and kindred tinted blossoms into the deep magenta reds, but if a terra-cotta red appears among them, the whole colour arrangement becomes disagreeable.

The warm pinks and the warm reds together, or such reds with yellow, or the white flowers alone are beautiful. The shapes of the white chrysanthemums give enough variety to even white alone, if the surroundings are well selected, to make an agreeable subject to paint. Some of the blossoms are large and feathery, round and soft; some like eccentric stars, with fierce and adventurous petals; others like small, mild rosettes; and yet others again, remembering their wild ancestors, have yellow centres. The yellow chrysanthemum goes well with nearly all the reds alone.

White Chrysanthemums.—These, we may say, are of two kinds, strictly speaking—the *pure* white and the cream white. Both of these varieties, considered separately, are indisputably white, but place them together, and the different quality of their whiteness becomes immediately apparent. The *pure* white are devoid of any tinge of colour, and may be painted as follows:—

For the general tone of the light masses, mix White, a very little Pale Cadmium, a very little Vermilion, and the smallest possible quantity of Ivory Black. Deepen this tint in the darker tones. The high lights are put in with pure white, qualified by a very little of the colour of the general tone. The shadows are painted with a little White, Yellow Ochre, Madder Lake and Ivory Black. In the half-tints, use with these colours a little Cobalt, adding also some Burnt Sienna in the deeper touches. Very little or no white is needed here. Where the centres are a very warm yellow, mix Cadmium, White, a little Madder Lake, and a little Raw Umber. A very little Ivory Black is added in the grayer parts. Soft bluish half-tints are made with Cobalt, Light Red, Yellow Ochre, and White.

Begin by massing the lights and shadows, mixing the colours as just named "for the general tone"; for the light parts, deepen this general tone, if the flower is in a subdued or half-light; or use more White if the flower is brilliantly lighted. Where the *pure white* is tinged with a little yellow, the same colours are used, with the addition of a little Deep Cadmium in the local tone; and if the centres have a greenish cast, a very little Cobalt may be mixed with the Yellow Ochre.

Occasionally the white chrysanthemums are very faintly coloured with the faintest suggestion of pink or violet, while still to be classified as *white* flowers. In such case, simply add a little more Madder Lake or Cobalt, or both, to the local tone, and this will give the requisite hint of a dominant colour.

After the colour is all laid in, having broadly massed the lights and shadows as directed, put in the highest *lights* with a small, flat, pointed sable brush and carefully draw with the point of the brush the outlines of the petals in *shadow.*

Yellow Chrysanthemums.—A general tone of light and dark is first laid in, covering the principal masses within the outlines upon the canvas. For the lighter portions, mix White, Pale Cadmium, a very little Ivory Black, and a very little Madder Lake. The darker parts, including the shadows and half-tints, lay in with Yellow Ochre, a little White, and a very little Ivory Black. Where reflected lights deepen the yellows, add a little Deep Cadmium to the local shadow tint.

In some of the yellow flowers, where a greenish colour is seen in the shadows, a little Raw Umber may be added to the local tone with good effect, and a very little Cobalt may be permitted in the half-tints, mixed only with White and Light Red.

The Leaves and Stems are generally a warm green tone; and you will find a hint of crimson in the calyx. Use for these greens Zinober Green (light), qualified by Madder Lake, Ivory Black, a little Cadmium, and as much White as may be found necessary. Use a small brush in the drawing of the outlines, and load this well with colour. An excellent effect is obtained at times by employing *the edge* of a small flat bristle brush, which is rather stiff, yet elastic. This brush, lightly poised in the hand, is held half-way up the handle, and if well managed, the whole of a small leaf or petal may be laid in with one sweep, dragging the colour quickly in the right direction over the canvas.

Deep Yellow Chrysanthemums.—A warm gray background may be used, consisting of Raw Umber, Yellow Ochre, White, Permanent Blue, and Madder Lake. These colours will serve for the foreground also, but substitute Ivory Black for Permanent Blue. For the Chrysanthemums use Medium Cadmium, White, Yellow Ochre, a little Vermilion, and Raw Umber for the local tone. In the lights use Madder Lake, Ivory Black, White, and Light Cadmium. In the shadows, Madder Lake, Raw Umber, Deep Cadmium, and a little Ivory Black.

The Leaves and Stems may be painted with Antwerp Blue, White, Light Cadmium, Madder Lake, and Ivory Black, with the addition of Raw Umber and Burnt Sienna in the shadows. In the highest lights, where cool blue greens appear, substitute Permanent for Antwerp Blue, making thus a softer gray tint.

Red Chrysanthemums.—In painting the Crimson and Light Red flowers, use for the medium tones Madder Lake, Light Red, Yellow Ochre, White, and a very little Ivory Black. In the dark reds use Madder Lake and Raw Umber, adding Burnt Sienna and Ivory Black in the deepest touches. For the gray half-tints use a little Ivory Black, White, Yellow Ochre, and Madder Lake. The highest lights are painted with White, a little Yellow Ochre, and Madder Lake, to which is added the least touch of Ivory Black.

For Lighter Pink chrysanthemums use Madder Lake, White, Yellow Ochre, and a very little Ivory Black. In the shadows, Raw Umber and Light Red are added, and in the cool half-tints use a little Permanent Blue, with White, a little Ivory Black, Yellow Ochre, and Madder Lake. For the yellow centres use Light Cadmium, White, Madder Lake, and Raw Umber or Ivory Black.

Purple Chrysanthemums, generally speaking, shade from the outside inward, showing paler tints of violet in the centre, sometimes at this point almost fading into white or pale yellow. Where you find such hints of lighter colour it is always well to take advantage of them, and even a little touch of faint straw-colour in the heart of a purple flower presents an agreeable contrast.

Deep Purple Chrysanthemums.—The local tone is laid in with a general tint made with Permanent Blue, White, a little Madder Lake, with the addition of a very little Yellow Ochre and a little Ivory Black. Make this tone lighter or darker, as may be required, in modelling the flower. The deep shadows are added later, and the colours used are: Permanent Blue, Burnt Sienna, Raw Umber, and a little Madder Lake. No White is needed. Where the deepest touches of shadow are seen beneath overlapping petals and in the darker touches, mix Madder Lake, Blue, and Ivory Black almost pure, using a small-pointed brush here. The high lights leave till the last, so that the quality of colour may be pure and crisp. Mix for these, Cobalt, White, Rose Madder, and a little Black. A small flat bristle brush is useful for this purpose; when filled with pigment, it may be guided along the edges of the petals in crisp, short lines.

The Green Calyx is painted with a warm quality of green, which may be made more blue in some cases, following the suggestions of nature; bear in mind that the little net-like forms here are only visible in strong light.

Leaves and Stems.—The Green Leaves may be painted with the same local colours given for the calyx; but more black with Burnt Sienna is added to the shadows throughout. For these larger and darker leaves mix, for a general tone, Medium Zinober Green, with White, a little Antwerp Blue, Ivory Black, and Madder Lake; in the deeper shadows some Burnt Sienna with Madder Lake will be found useful, and less white and yellow are needed.

The slender Stems are carefully drawn with a pointed bristle brush. Mix for them a tender green, made of Zinober Green with White, Madder Lake, a little Cadmium, and a little Ivory Black. Where small, rich touches of reflected light are seen, mix Burnt Sienna, Antwerp Blue, Raw Umber, and a very little White, with Cadmium. Sometimes very little, if any, white is needed; but this must be a matter of judgment.

Dahlias.—For a background for rich, deep maroon-coloured and flame-coloured dahlias a tone of medium gray, rather cool, would be appropriate. Use White, a little Ivory Black, Permanent Blue, Yellow Ochre, and Light Red, adding Madder Lake in the deeper shadows, with less White and Yellow Ochre.

Flame-Coloured Dahlias may be painted with Light Red, White, Madder Lake, and Yellow Ochre, qualified with a very little Ivory Black. In the deeper tones add Burnt Sienna, using, of course, less of the lighter colours. For the yellow centres of the dahlias use Light Cadmium, White, and a very little Ivory Black —just enough to prevent crudeness in the high lights. In the shadows add Raw Umber and Burnt Sienna.

Deep Maroon-Coloured Dahlias may be painted with Madder Lake, Ivory Black, and Light Red for the local tone. In the shadows substitute Burnt Sienna for Light Red, and add a little more Black.

The Leaves and Stems paint with Antwerp Blue, White, Light Cadmium, Ivory Black, and Vermilion, adding Burnt Sienna and Raw Umber for the shadows. The stems are a lighter green than the leaves; more White and Cadmium, with a very little Blue, are used for these. The buds are also of a lighter tone of green, with small streaks of red shining between; they are painted with the colours given above.

Asters.—The purple flowers are painted with Permanent Blue, White, Light Cadmium, a very little Madder Lake, and the least touch of Ivory Black in the local tone. In the shadows add Burnt Sienna and Raw Umber. For the pinkish-white blossoms, use for the general tone White, Yellow Ochre, a little Permanent Blue, Madder Lake, and the least touch of Ivory Black to give quality. In the shadows add Burnt Sienna and Raw Umber if needed. For the more brilliant pink tones add Vermilion with the Madder Lake already mentioned.

The Leaves of asters are dark and warm in colour, but rather gray in quality. The Stems are somewhat darker and more brown than the leaves. To paint the leaves, use Antwerp Blue, White, Cadmium, Vermilion, and Ivory Black for the local tone. In the shadows add Raw Umber and Burnt Sienna. For the stems use the same colours, but add Raw Umber to the local tone, and use more Burnt Sienna in shading.

X. HOLLY AND MISTLETOE.

Holly Berries should be laid in with a flat tone made with Light Red. Madder Lake, White, and a little Ivory Black, with the addition of Burnt Sienna in the shadows. Paint heavily, using a little Siccatif de Courtray, if necessary, to dry the colours. When the berries are thus laid in, with due regard to light and shade, do not attempt to finish them at once, but proceed to the leaves while the paint is drying.

The Leaves are a dark, rich green, gray in quality, though warmer in the shadows. Use Antwerp Blue, White, Cadmium, Madder Lake, and Ivory Black for the local tone. In the shadows add Burnt Sienna, and Raw Umber.

Finish the berries by glazing. First ascertain that the under-painting is hard dry; then oil out the whole surface of the berries. Use for this a stiff, short, flat bristle brush, and with it rub well in some pure poppy oil. While the oil is still moist, the process of glazing is completed by adding a coating of pure Madder Lake well mixed with a little poppy oil. The latter should be well rubbed in with the fingers also, if necessary. While the paint is still dry, brilliant touches of high light may be put in with White, a little Yellow Ochre, and Vermilion. The shadows must be deepened with Ivory Black, a little Permanent Blue, and Burnt Sienna.

The berries of the Mistletoe are pale greenish yellow, having the texture of wax. Use for the general tone Light Cadmium, Raw Umber, White, a little Cobalt or Permanent Blue, Madder Lake, and a very little Ivory Black. In the shadows add Burnt Sienna.

The Leaves are light yellowish green, qualified by gray. Paint them with the colours given above for the holly leaves, but add more Cadmium and Raw Umber, and also use Vermilion in the local tone, in place of Madder Lake.

STILL-LIFE PAINTING.

I. INTRODUCTORY.

THE term "still life" indicates a painting which represents one or more inanimate objects, such as vases, drapery, fruit, vegetables, fish, game, etc. Growing flowers can hardly come under the head of still-life subjects, though a vase of cut flowers, composed with drapery and other accessories, may legitimately be so classed. Flowers painted from nature in the open air are called flower studies.

In painting from still life it should be clearly understood that perfect imitation does not, of itself, constitute excellence; but still it is essential to excellence. We expect the objects reproduced in such a way that they will impress us precisely as the objects themselves would under the same conditions, and the conditions we are to bring about; herein lies the secret of artistic arrangement. Do not suppose that this is a mere matter of taste, all easy enough if facility in copying could be secured.

It is well to be anxious about your ability to copy or reproduce the object before you, and you cannot be too faithful in doing this, provided you do it in the right way. But you are not required to search out and scrutinise that which you are to paint; you must take in the general character, what is seen at a reasonable distance. That should impress you so that you will reproduce it as surely as the camera would; and you have the advantage over the camera, in that you are able to use colour as well as light and shade.

It is in light and shade that the novice is most apt to fail. The unpractised eye is slow to recognise its supreme influence; local colour seems the more real, and there is a disposition on the part of the novice to allow it to hold its own even in the highest lights and the deepest shadows.

In giving instructions for setting a palette to paint a scarlet drapery, a teacher will be likely to cause consternation if he names the colours for shades, half-tints and lights before he names Vermilion. Bone Brown, Burnt Umber, Cobalt, Yellow Ochre, and White sound very foreign to the purpose, and yet a great quantity of these colours, with only a little Vermilion, is what we are sure to want, to produce the effect required.

Every colour will call for its own peculiar grades of light and shade, and its individual character will show to some extent in them all. It is necessary to understand this fact, and, at the same time, to guard against an excess of local colour. Its modifications depend upon light and shadow, and we have only to manage these properly to get what we want.

First, be sure that the light comes from one source. Let it be a side light, from the left if practicable, and so that it will strike the principal objects at an angle of about forty-five degrees. This can easily be managed by darkening the lower part of the windows.

If a horizontal surface is to support the objects, it should be placed below the level of the eye, and should occupy less than half the height of the canvas, a suitable background being arranged for the upper part. For the first experiments a plain neutral background is the best. The easel may be placed somewhat nearer for objects of a delicate character than for those that are large and bold; but it should always be several feet away, and so that, by looking to the left of it, a good view of the objects is obtained. If they are not placed on a horizontal surface, but suspended on a vertical one, let them clear it enough to admit light under them and throw their shadows beyond, thus getting more relief. In any case, let the light be concentrated upon one portion, and let there be a counterbalancing mass of shade, all other lights and shades being kept subordinate.

II. SOME NON-PERISHABLE MODELS. DRAPERY.

Until you can work confidently and expeditiously, it is best to make studies of objects that are not perishable. You have open to you a wide range of still-life models, such as *objets d'art*, sea shells, corals, drapery, books, musical instruments, and sheet music, bottles and glasses of wine, nuts, raisins; and so you may gradually work up to fresh fruits that keep well, like apples, oranges, and pine apples.

It is not by painting a surface according to our knowledge of its actual character that we imitate it; its *appearance* is what concerns us. The most successful rendering of this appearance may, in a material way, be as different as possible from the original. This sounds paradoxical; but take, for example, the high light on a polished surface, it needs perhaps a thick dash of colour to represent it; to smooth this colour down, to paint over the surface evenly until it is in reality like the polished surface, is not to give the effect at all. No more do we get the effect of perfect transparency by keeping the colour uniformly thin and smooth; we are likely to want sharp darting lights, reflected colours, and work which, upon close inspection, would seem quite foreign to the material represented.

Shells and Coral.—There are the beautiful polished surfaces of some sea shells; take the fine, pearl-like effects where violet, emerald, light rose, and cerulean tints come in juxtaposition, with high light to enhance them and tender gray to bring them into harmony; these colours may be laid ever so abruptly in their places, so that they appear like coarse patches near by, and yet we have the effect of matchless smoothness.

With corals also we want general effects of colour, light, and shade painted in freely with large bristle brushes—let there be no laborious building up with little sable points.

Drapery.—It is always easy to get drapery of various textures. Silk of any colour, when placed in a favourable light and allowed to settle down in easy folds, will take on shade of the tenderest gradations, and lights that call for sharp angular strokes of the brush.

Satin does not form as decided lines and angles as silk; it is more disposed to fall in curving lines, and the lights are consequently broader, though the highest are strong, as they are on all surfaces that have gloss.

White Satin may, for the general tone, be painted with White; or White and Ivory Black; or White and Raw Umber; or White, Raw Umber, Ivory Black; Ultramarine and White; or—warmer—White and Indian Red; or White, Black, Indian Red.

Black Satin.—Ivory Black, White, and Burnt Umber may be used for the dead colouring. Or you may sketch with Indian Red and Ivory Black, and use Light Red in the higher lights. Finish with White, Ivory Black, and a little Crimson Lake.

When *Velvet* rolls out its soft round folds, the light will diffuse itself along them until it has to yield to shadow; and, as the shadow deepens, it will be of the richest kind. It is by carrying out this effect that the velvet-like texture is obtained.

Cloth has none of the decided ways of silk, neither does it assume the soft, ample character of velvet. There is a sort of steady purpose about its substantial folds, and it must be painted with a firm brush (see p. 147).

Thin Draperies.—The very opposite of this is seen in thin draperies—muslin, lace, and everything that is gauze-like. Some of these want a mere film of colour where they are single and without high light; but their flow is sure to involve some opaque lines.

Linen.—Blue Black and White, slightly warmed (with a very little yellow or red) where it approaches the skin or is subject to warm reflection, will be a suitable combination.

Shadows of Textile Fabrics.—Keep the shadows of all textile fabrics as warm as the colours which enter into them will allow, and let their edges be cooled with neutral tint of a character that will harmonise with the local colour. The dark browns enter largely into the shadows of all dark colours, even into those of black; the lights on black are cool. On white and the colour nearest allied to it—that is, light yellow—shadows have the least warmth; they are bluish on pure white and greenish on light yellow. Lakes or madders, as well as browns, may be used to warm the deep shadows of blue drapery, and black works well in the lighter ones.

Books, closed or open, are excellent, either as the principal or subordinate objects in a study.

Placed at various angles, they test very fairly one's skill in perspective drawing, and their treatment as to light and shade may require much skill. Let a thick book that has not been used a great deal lie open, and the leaves on one side or the other are sure to arch up and separate, casting the truest lines of shadow, and showing corners that must be put in with relative accuracy. Until one has had enough practice to get the effect of printed pages without making correction, it is best to paint the surfaces of the leaves as they would be if blank; then, after they are dry, moisten them with poppy oil and put in the general effect of the print. Great care must be taken to make the lines to narrow and run closer together according as the pages recede. There must be no actual lettering, for ordinary print, however large the scale. A partly opened newspaper is a good thing to introduce in a study, and its closely printed columns, appearing now in light, now in shadow, require no little care.

Music on a large scale must show something very like legible notes. It is best to have it partly rolled, or laid so that one can look across it obliquely without seeing every bar clearly.

Musical Instruments.—When a musical instrument, as a guitar, violin, or banjo, is to be painted, you must not go to work as if you were manufacturing it; trust to light and shadow rather than to fine workmanship. The drawing must be correct without being elaborate, and small parts should be suggested only. Neither the colouring of the woods nor the treatment of the surfaces will be found difficult if the arrangement with respect to light has been judicious.

Glass.—We rarely see glass well painted, especially clear, colourless glass. Whatever is behind the glass should be finished rather smoothly and allowed to dry first; then, after securing the form with a little oily white in a sable brush, the same thin mixture may be rubbed over with the finger. A fine, crystal-like appearance can never be obtained where too much white has been laid on the surface. This does not apply to the high lights; these may want sharp, thick touches of white, tempered with neutral.

Wine in Glass.—Glasses that contain wine may be outlined with thin white and finished at the base and top before the wine is introduced. For *Red Wine* use Madder Lake shaded with Brown Madder, with a touch of Scarlet Lake in strong lights. For that which is amber-like, use mainly Indian Yellow; then shade with Vandyck Brown and light with Cadmium. There are *Dark Wines* that want Vandyck Brown and Brown Madder, with the amber tints in the lightest, most transparent parts. Reflections, it will be found, will do a great deal for the transparent effects in glasses that are filled or empty.

Dark Glass Bottles are not so difficult to paint. Indian Yellow and Blue Black will give the peculiar bottle green; shade with Raw Umber and Blue Black. Naples Yellow and Neutral Tint will be wanted for the lights. Unless the light is shining directly through a bottle, it is hardly necessary to remark the liquid in it will not show its true colour, but simply appear dark; something like Bone Brown must be thrown in the bottle tint.

III. DRIED FRUIT, APPLES, PEARS, ORANGES, LEMONS.

Nuts and Raisins.—Among things edible, few allow more room for experiment than nuts and raisins; and they are desirable in a great variety of compositions. Each kind of nut has its peculiar surface, and affords excellent practice on this account. Burnt Umber, Vandyck Brown, Burnt Sienna, Yellow Ochre, Naples Yellow, and White, with Neutral Tint, set the palette for all the well-known nuts.

The flattened, irregular form of raisins may first be blocked out with Brown Madder and the Siennas; these three colours may be varied to suit the tone of the specimens in hand. Usually Raw Sienna is required around the lighted sides. Now take a light neutral tint and put in the lines that are thrown up around the depressions. These will, in some places, coalesce; and they must not appear hard and wiry anywhere. The stems want warm colour —usually Burnt Sienna with Naples Yellow and White. If the bunches stand up well, their cast shadows may be made very effective.

Apples are not so difficult as some of the fruits that have a bloom, and yet they will look very crude if not treated with skill. Take one kind at a time, either dark or light. Those that have a light red skin shaded into light yellow are more desirable than those that are streaked, and they are more pleasing than those that are all yellow or greenish. If very few are used, and they are put on a plate, a half and a quarter of the fruit may be laid so that they show the brown seeds, with their split horny coats, and the whole fruit may be placed back where it will be partly hidden. A plate must be produced in a faultless manner; any error in drawing is fatal. There are various ways of arranging fruit that are less conventional; one of the simplest is to lay it on a napkin, which may turn up a little against the background and then come well forward. This should receive plenty of shadow, especially if it is white. A coloured fruit napkin looks well if it is not so bright as to take away from the effect of the fruit. Lines that bound the cut surfaces of apples and show the edges of the rind may be sharply defined, while those that describe the circumferences must be very retiring. The gray tints should play an important part. Take care of these, and of the lights and shadows, and there is little danger but that the local colours will get their due.

Vermilion, Indian Yellow, and Burnt Sienna, with White may be used for the red side of an apple, and for the greenish side, a deep red, Brown Madder, Vermilion, or Vermilion and Burnt Sienna.

Pears.—For ripe, mellow pears, set your palette with Raw Umber, Raw Sienna, Ivory Black, Lemon Yellow, and White. Keep the shadows comparatively thin, and lay on the lights with unsparing hand. The half-tones are a mixture of Lemon Yellow, with a little Ivory Black and Raw Sienna. The shadows are composed of the same colours, with Raw Umber added. Add white to the Lemon Yellow for highest lights; next to them use Lemon Yellow only.

Oranges.—When oranges are painted with other fruit, they should be placed where they cannot assert themselves too strongly. If they are cut, the luscious-looking pieces lying in the fresh peels may be brought forward to advantage and made to throw their shadows on specimens of whole fruit which would otherwise be too glaring. In painting the cut surfaces, be cautious about using the strong, opaque yellows too freely. Let the transparent Indian Yellow do all it will first; then introduce Cadmium where it is necessary; shade with Burnt Umber and Vandyck Brown, and let the inner white skin and dividing membranes and seeds have White, Lemon, and Naples Yellow, with a faint touch of Ivory Black, daintily distributed upon the markings.

Of course oranges that are not cut allow more time for study: they may be used alone, so as to produce a very pleasing picture, if most of them are left wrapped in the common semi-transparent paper in which they are shipped. It is best to indicate even those that are to be entirely covered with a thin yellow tint a little deeper than what is to be suggested in finishing, and where the papers are open enough to allow glimpses of the fruit, the final colouring may be given before bringing any paper around. Unless you can work skilfully enough to avoid repeating efforts, it is best to let these orange tints dry before introducing the papers. The Umbers and Yellow Ochre must enter more or less into the lightest paper used, except where there are decided folds and crumples which are more opaque and also well lighted. Black may be worked into the shades and cast shadows. Let from one to three oranges be entirely unwrapped. They should be close together, and the papers from which they have escaped may lie around near them and occasionally break their outlines.

A mahogany table makes a good horizontal surface for this study. It will reflect forms and colours and add much to the effect. The upright background should be dark and warm to harmonise with the surface of the table.

Lemons may be painted with Indian Yellow and White, with a touch of Orange Cadmium in the shadows.

Baskets.—A fair-sized basket with a tipping lid is an excellent adjunct in a still-life composition. Let the basket be thrown over so as to present its deep, dark concavity as a background, and let the lid drop down so that the inner side offers a surface for the fruit to roll out on. Some suggestion of earth and grasses in the foreground, with a vague, shadowy effect in olive and amber beyond, can be made very pleasing. Let these be copied from nature, if possible.

IV. PINEAPPLES, MELONS, GRAPES, PEACHES, APRICOTS.

Pineapples and Melons combine well, and both have surfaces that afford profitable practice. The first time that you attempt either, let colour wait until you can produce the texture in pencil—a finished pencil drawing. When the mathematical markings and the indentations on the receding sides of a pineapple are put in as they should be, you really have a perspective drawing; and the irregular markings on a musk-melon rind are not less difficult. To make these as they appear in all the gradations of light and shade requires considerable skill

The crescent-shaped pieces of a cut melon, with their dewy, yellowish or salmon-coloured inner surfaces shaded off to the green-edged skin, may be made to look temptingly real. Some of the warmest, brightest inner surfaces will bear Madder Lake and Cadmium; others, Burnt Sienna and Yellow Ochre. Naples Yellow and Light Zinober Green may be used for cool tints. Rinds that have plenty of the rusty gray tracery, such as those of the nutmeg melon species, want, first, subdued green laid on broadly, then the Umbers, Naples Yellow, and White—all, of course, being subject to the effects of light and shade.

Water-melons from the hand of a beginner are sure to appear crude. Breaking the melon gives a richer, more frosty surface than cutting. The bright rose tint may be produced with Madder Lake, Vermilion, and Pale Cadmium. These colours dry so slowly, and the fresh, frosty appearance is lost so quickly, that it is best to finish the surface at once by dabbing rather stiff white evenly and lightly over it. The places from which seeds have loosened or dropped will want warmer, deeper crimson, rather than frosty white. Bristle brushes throughout are best, except, it may be, for the seeds. Whether these are black, brown, or quite light, they will take all the high light that their position will allow.

In the shadow part of the study, which should be much the larger part, bring pretty well back and toward the side nearly all of one uncut melon and portions of the pieces of another those coming more forward being allowed to receive some direct light. In the centre, the broken water-melon may have similar treatment, the outer, green part resting in shadow, and the fresh inside being partly lighted.

Grapes, if treated with some skill and a great deal of care, are almost certain to yield an encouraging result to the amateur. A piece of common light brown wrapping paper which is tolerably thick and free from creases makes an excellent background. For very light-coloured grapes, something a little darker and warmer is wanted; dull finished red-brown cotton is good. The same shade in olive may be used for grapes that show considerable garnet. When a single bunch is to be painted, the most pleasing kind is one that is heavy and spreading at the upper part and quite tapering at the end. The bunch should be hung so that the light will stream through it on one side and cast its shadow on the other, being placed far enough from the centre of the composition to allow of somewhat more space on the side where the shadow falls than on the other. We expect to get some suggestion of transparency in grapes of any colour; the least, perhaps, upon dark bluish purple ones that have a great deal of bloom.

The deepest, warmest colours should be laid in first, whether they be purplish, greenish, or rosy. The first of these three hues calls for the deepest Carmines, French Ultramarine, Blue Black, and Bone Brown; the second for Indian Yellow, the Siennas, and a little Antwerp Blue; the third for Madder Lake, Brown Madder, and Mauve. Now illuminated portions, high lights, and the several grades of shade must be successively painted in, and, finally, the bloom.

The darker the grapes, the more bluish the bloom. In any case, where it extends into the lights and into the shades, it must partake of their respective qualities. Only the grapes that are to be brought out well should be allowed to catch high light. If almost every grape has a little, a speckled appearance will result. There should be no light on the principal dark mass, except, here and there, a ring of reflected light on some of the most projecting grapes. Occasionally pieces of stems should show in the interstices—they help to give an open, natural appearance to the bunch. If the main stem is not attached to a branch or lost in leaves, it may have some of its first projecting stems caught over a nail or peg, or be suspended by a coarse string. The finish should not be any finer than is required for a perfect resemblance at a distance. Even for this we must have the most unerring circumferences. Though they may be so soft as merely to suggest form, they must be faultless as the fruit itself. The final retouching should be done when the light is most favourable, in order that the illuminated sides may get full justice done them, and that every detail may be made satisfactory.

When grapes are painted in large quantities or introduced with other fruit into compositions, only the most prominent clusters will want the high finish given to the individual bunch. Beyond these we are cognisant only of the colour effects and the light and shade of the whole. Unnecessary minuteness of finish is a misapplication of skill, which is very much like a lack of skill.

Red Grapes may be painted with Indian Red, Yellow Ochre, and White, with a little Black; the bloom on the surface with Indian Red, Black, and White.

Black Grapes.—Use Black, White, and a little Burnt Sienna.

Peaches.—Generally those that have rich warmth of rosy colour are preferred for painting, but many that are nearly white or of a fair greenish yellow, with a faint blush, may be made very pleasing. In some peaches, the portions of the rosy sides that do not receive much light want very deep colour, like Brown Madder and Bone Brown. The first colouring, for all kinds of peaches, must be kept pure and broad, the illuminated parts rather subdued and the shadows transparent. Any peculiar mark, like a flattened spot, showing mellowness, or a line indicating where the fruit would easily cleave open, should be put in; and some of the deep concavities at the stem ends should also be turned, so that they shall show more or less. When the first painting is sufficiently dry it may be rubbed very scantily with poppy oil, to prepare it for receiving the bloom, which must be pretty generally diffused over it. This will want the lightest gray, made yellowish, pinkish, or greenish, according as it may appear. It must be laid on lightly, so lightly that, except where the surface is presented obliquely, nothing like an opaque appearance is given. It is where we look across, not upon, this downy coating of the peach that we get this bloom-like gray tone very perceptibly; but we are more certain of a general soft texture if no part is entirely missed. To ensure the delicate, light character of this final painting, a large bristle brush must be used and kept very scantily charged. Thinning the tints with oil would give an unnatural smoothness. No further introduction of colour must interfere with the perfect harmony of this finish. As peaches are as difficult to paint as any fruit that one is likely to undertake, if the first efforts seem in the least successful to the critical eye, it may be considered flattering.

For the general tone of the warm-hued peach paint with Light or Medium Cadmium and White, with a little Vermilion. In the deepest shadows substitute Yellow Ochre for Cadmium, and Madder Brown for Vermilion. For the bloom make a warm gray.

Apricots are nearly allied to peaches, but they are easier to paint. They have less variety of colour, and their surface is merely velvety. The California apricots, which are familiar in our markets, do not usually show much, if they show any blush. Naples Yellow, a little Cadmium, and Burnt Sienna will give their characteristic warm, creamy colour. Some varieties of the apricot may call for Light Red, Madder Lake, and even Vermilion. Lights must be softly diffused, and gray tones very tender, to suit the fine texture of this fruit.

V. PLUMS, CHERRIES, CURRANTS, RASPBERRIES, BLACKBERRIES.

The various species of **Plums** offer much the same range of colour as those of grapes, and some have a similar bloom; but their texture is altogether different. Some of the large plums that are of a royal purple rather than a bluish purple want the richest madders and carmines, with a little French Ultramarine. These may be heightened in the light parts with a little Vermilion, and the warm shadows may have Burnt Sienna and Bone Brown. The colour cannot be too rich, but it can be overloaded. The blue bloom may be made of Cobalt, Naples Yellow, and White, and laid on lightly where it is actually seen; if it is carried the least beyond, it will be at the risk of damaging the royal purple. Where the bloom is sufficiently apparent to seem at all opaque, the first colouring may be scanty. How much of the work may be left for a second painting depends upon the measure of skill that may be applied to it.

Plums will bear glazing, but heavy or repeated glazing should be avoided. It is liable to produce cracking.

For light-coloured egg plums we want medium warm greens melting into light cadmiums and carmines, with cerulean blue in the gray tints. The high lights are nearly white, and the deepest shadows want Burnt Sienna, with medium greens and Raw Umber. The bloom may be pinkish or greenish, usually the latter. In either case it wants White and Naples Yellow, with sufficient Terre Verte and Madder Lake added to make a pale neutral; according to the respective proportions of the Terre Verte and Madder Lake will the neutral bloom be pinkish or greenish.

Cherries, either light-coloured or dark, make beautiful studies when artistically treated and brought out in all their smooth, bright rotundity. For the light-coloured cherries called white-hearts, the background might have more gray; for the deep red ox-hearts, more olive. The polished surfaces of cherries are very exacting —give them a dull appearance and you are lost. It is not smoothness that we want, but the effect of smoothness; and this depends much upon the lights, direct and reflected. The most positive of the latter must have a sharp little dash of colour; and where any portion of a circumference on a shaded side receives reflected light, it must be soft, however brilliant. The grays must be brought well up to the lights.

There will be little difficulty as to colour. The lightest local colour is to be laid on first, Naples Yellow for the light species, Madder Lake and Burnt Sienna for the deep red. The dark colours to be applied afterward to the latter are Crimson Lake, Brown Madder, and Bone Brown; to the former, Yellow Ochre and Umbers on the yellow sides, a little Vermilion, Madder Lake, and Brown Madder on the red Black may enter into the grays or be used to qualify lights, as on other fruit. Of course, all the colours are deepened or warmed according to the degree of ripeness to which the fruit has attained.

Currants are very pretty when well painted; their translucence is in their favour. Some prefer the large cherry currants; but the small ones that we associate with old-fashioned gardens seem more poetic: the white ones, clear as pale topaz, and showing every seed hidden within; the red ones, looking brighter than rubies, and nodding coquettishly upon their brisk curving stems. The colours for the two species are very much like those used for the two species of cherries described; but they must be treated so as to produce semi-transparency instead of wax-like solidity. It is best not to use currants in large compositions, for broad effects do not suit their peculiar clearness and delicacy.

Fruits termed, in botanical parlance, aggregate, are difficult to paint; for the general effect of the little protuberances, or separate drupes, must be given, and yet over-painstaking minuteness must be avoided. To accomplish this with blackberries, lay them in first, *en masse*, with Bone Brown and Brown Madder —rather more of the latter—letting the colour break and thin off in describing any outer circumference. Now develop individual berries by laying on lights and half-tints, but without recognising any aggregation or unevenness of surface. Cast shadows and accessories may also be painted, and when the general effect of light and shade is secured, the little protuberances are easily developed by being touched lightly with a small, soft brush that carries but little colour. That colour may consist of the bluish light that belongs to black, or it may be reddish. When approaching a finish, if any of the darkest shaded portions of the fruit seem to demand Ivory Black, let them have it; but if this is employed early, we are sure to have a cold, dull effect. All interstices must be left warm; and when the fruit has a natural appearance from a proper distance, it must not be elaborated further.

Raspberries have plenty of bright colour of their own. When they are picked we get an additional value in them, that which lies in their deep, hollow cups; a good number of these should be allowed to fall near together, that they may compose one rich body of strong colour, and a few may be scattered among the convex surfaces. Presuming that they are painted alone, whatever is used to hold them—a basket, dish, cabbage-leaf, grape-leaves held together with thorns, anything that will serve the purpose in an artistic manner—should let some escape, to roll out and distribute themselves in front. Now and then there may appear a stem-end showing the wax-like cone from which a berry has fallen. The red berries are more likely to be chosen than the amber or yellow species. They may be painted upon the same plan as blackberries.

Madder Lake may be used for the general surface, then interstices may be carefully laid in with Indian Red and Bone Brown, the three colours uniting in proportions suiting the depth of tone required. The darker sides of the cups will want more or less of the same colours, the lighter sides may be left ready to receive reflected lights or whatever may fall to them. For the brightest red of these and of the convex surfaces, Light Cadmium and some Vermilion may be used. The same, with white, will develop the little protuberances. The gray tones on raspberries are very bluish, and, in some lights, very abundant. It is best not to be too lavish with these before the separate drupes or protuberances are developed, or they may lower the red tones so much as to defeat the process. The characteristic development of all these aggregate fruits depends mostly upon having the right tint to work upon, and the red of the raspberries must be pretty strong in order to relieve the light touches. Their dewy-like surfaces want diffused rather than sharp lights.

VI. FISH IN AQUARIA. OYSTERS.

Live fish in glass bowls or rectangular glass boxes are sometimes introduced with good effect in still-life pictures; but painting the denizens of aquaria is a departure from still-life, as any one who tries it will soon discover. Bait may be placed where it is likely to be sought from one particular side; and a fish thus tempted will assume about the same position over and over again. Some imagination must be brought to bear in order to make a glass wall of an aquarium appear like a section of flowing water; in fact, the glass must be ignored, and the water within painted as if apart from all artificial conditions. The shadows, the penetrating lights, may be rendered without much difficulty; it is the capricious subject itself that will tax the skill.

The scales of some fish are thick and thoroughly overlapped, like a coat of mail; others are thin and not so closely or so firmly set. They owe their lustre to superficial crystals. Upon the ablette, a species of carp, these are so brilliant that they are used in preparing the gewgaws known as Roman pearls.

Fish living in clear waters that receive plenty of sunlight not only appear more brilliant, but are more brilliant, than others, their coats being better supplied with colour-cells; and if from any cause these waters become turbid, the fish will likewise change. Trout are particularly susceptible in this way, and they also lose their beauty very quickly after being caught. They should not be chosen as models for early practice in painting fish; for under faltering hands their bright jewels will vanish as if by magic.

Perch are symmetrical in form, and their rich, varied colour may be depended upon for some hours. Pickerel have ugly heads, but are otherwise handsome, and, like most of the pike family, keep their fresh appearance long after coming out of the water. There are several other fresh-water fish that look well on canvas if happily treated. Those that are broad or thick for their length are sure to appear stiff; as a rule, it is best to choose the slender and pliant.

The main thing is to do justice to the fish while they are fresh. They must be kept well shaded, must be frequently sprinkled or sprayed, if practicable, with cold water, and ice should be put in the mouth of each. If it seems expedient to let any long-tail ends bend toward the foreground, very well: it will give more variety of outline, and introduce some desirable foreshortening. If the foreground is rock, or anything that will hold water, here, too, is a chance for some good realistic work. In a group, only two or three of the outer fish will show entire, perhaps only one will be strongly lighted. They must be well drawn—every beautiful curve must be faithfully produced, and the proportions nicely observed. When drawing them with charcoal and pencil, begin with the darkest local colour and go on with such varying shades as can be got at, apart from lustre or iridescence; shadows, too, may be smoothly laid on. With all this first painting, Siccatif de Courtray should be used, that the surface may be dry in good time to receive the finishing tints.

Thus far the colours shall have been kept a little warmer than they seem, to allow for the neutralising effects of silvery and gray tints; in the prevailing olives, for instance, less blue and black and more Raw Umber and yellow. The cruder yellows should not be used except in a dainty way in finishing. Indian Yellow and Yellow Ochre are the best for the first painting. While waiting for the drying, outlines may be perfected, fins and tails carefully carried out, and all the nice work about the heads may be looked after. When there is not much "tack" left, characteristic markings, like the broad, soft bands on perch and the dark network on pickerel, may be laid in with very thin colour. In the final painting, any or all the colours of the rainbow may be used, if only they are daintily used and not over-manipulated; neither must they be carried the least beyond where they are wanted. They are to add to the effect of the first painting, not to supplant it. High lights and gray tones come last, and nice discrimination is needed to bring all in harmony.

Although copper kettles and various things pertaining to the kitchen are painted in studies of fish, especially salt-water fish, it is not difficult to find outdoor objects that are associated with them.

It is usually supposed that salt-water fish keep longer than fresh, but the same precautions must be taken as with the latter, except that salt water instead of fresh should be used for wetting them. Large and conspicuous scales make the question of texture somewhat harder. They must not be treated too mathematically; it is only here and there that the light will strike them so as to show their divisions distinctly. As to the treatment of colour, the general directions given above are applicable to all the finny tribe.

Oysters have elements of beauty well worthy of attention. For a simple composition, select three or four of medium size and rather round, having the cartilage cut that attaches them to the upper or deeper half of the shell, and arrange them in as irregular and picturesque a manner as possible upon a marble slab. Remove the cup-like upper shells: place a glass of ale back and a little to one side of the oysters; arrange two or three well-browned biscuits and an oyster-fork in some convenient position, and the composition of your picture is complete. One or two empty half-shells might be placed in the background.

The colours needed to paint such a subject are White, Yellow Ochre, Naples Yellow, Burnt Sienna, Raw Umber, Vandyck Brown, Ivory Black, and a little Indian Red or Vermilion. A little Medium Cadmium may be needed for the ale.

VII. BIRDS.—FURRED GAME.

In painting game, it is well to begin with birds, and with those whose feathers lie closely and compactly, whatever the position may be. Wild pigeons are easily obtained, and make fine studies. Let a pair, male and female, be suspended by one leg of each against a rough oak board or an old mortared brick wall. If neither of these is attainable, the side of an old barrel that has shrunken staves and sprung hoops will serve well. Arrange them that the neck and breast of the male bird shall be strongly lighted, and that both birds hang well out from the background, in order that the shadows shall be extended and transparent. The head of the male will be inclined to reach below the other; it is best to let it do so, that both may not come on one line. Let the unbound feet come out naturally, and one or two wings should be well spread.

A canvas about 16 x 20 will be required. The drawing must be very accurate; the charcoal sketch may be corrected and reproduced with pencil, or with a fine tracing of thin colour. Some of the background tints may now be thrown around to receive the soft outlines. Next, lay the shadows and the darkest local colours on the birds, and so on with the next and the next darker, leaving the white of the canvas to give the effect of the white portions until something like the general effect of the whole is produced. The work may be left at this point, and if kept away from wind and heat, it will not be at all dry by the next day. Upon resuming, white may be used, but not too freely; a great deal of it will be pearl-like, and must be modified accordingly. The background will want to be carried out and finished before any delicate work is brought out on it. The quills, particularly those of the spread wings, must be laid in with the most unerring strokes; there are few things that require nicer observation and nicer handling. The legs and the slender feet, with toes now curling in, will need Indian Red, with Naples Yellow and some bluish gray. Upon working the third time, the surface should have poppy oil passed over it, and then further variation of colour may be looked after. The satin-like black on the neck of the male may be retouched with Vandyck Brown and French Ultramarine Blue. Where rich, warm brown feathers appear, let Burnt Sienna take the place of the blue. Where there is a thin transparent tinting of green use Dark Zinober; for contrasting rosy and purplish tinting choose Rose Madder and French Ultramarine. There will be some bright concentrated iridescence that must wait until the last, and then have a few deft touches of the strongest colours suggested. The high lights have also been reserved for the last painting.

Grouse, partridges, prairie chickens, and quail may be treated in a similar way; but the fluffy, flecked character of their feathers renders them more difficult. The colours are more sober, but warmer throughout. A simple palette of Burnt Umber, Burnt and Raw Sienna, Vandyck Brown, Yellow Ochre, Naples Yellow, Black, and White will soon, if well handled, produce the desired colouring. As with the pigeons, lay in the shadows and the darker colours first, keeping all very warm, and the dainty flecking must follow before any drying takes place.

Woodcock, plover, and several of the snipe and rail family you will find also desirable subjects, when you have had adequate practice.

Furred Game.—If you take up that kind of dead game which calls for the painting of fur or hair, you will be thankful for all the skill that you have acquired with the brush; for it is skill with the brush more than anything else, that enables one to produce the peculiar textures required. Studying the best paintings of live animals helps but little, unless it be some of the smaller animals represented full size and very near by. It is not merely the general effect of the coat that we want, but the actual appearance—something so real that one is tempted to see how it would ripple over from a blow of the breath.

It is worse than useless to start out at first with a fine specimen of game—a squirrel, rabbit, or deer, for instance; rather practise upon something that will wait as long as it is wanted. A fur robe of some kind, an old-fashioned muff, or a mink cape, we will say. Siberian squirrel is good, but not often seen nowadays. Many of the skins used for linings are similar to those one might wish to paint, but the fur usually lies down too flat and smooth. A few square inches of something that stands up in a natural way may be placed where it gets good light and shadow, and experimented upon. First paint in a suitable undertint representing all local colour and shadow, and be sure that it is warm enough and dark enough. Next, notice the way the surface lights up: the eye will not follow the length of the hairs unless it looks obliquely, and one must not expect to give strokes representing the length of the hairs except it may be at the turn of an outline, where they may be made very telling. There are Landseer brushes that are supposed to do wonderful things, but it is not so much the brush as it is the hand that wields it. One soon learns to choose, as if by instinct, the brush that will serve his purpose. For most of the work, broad, yielding brushes are the best —never little ones for individual strokes. Sometimes, in representing a part that is in direct light, stippling with a large stiff brush will give the effect. In any case the brushes must be but lightly charged with rather thick colour. When the right touch is found, it will produce what is wanted without much repetition; but be careful always to work upon the fresh colour, not into it.

Fur of a warm colour, like mink, needs lighting up with Yellow Ochre, a little Burnt Sienna and White in the light parts, and Burnt Umber and Black may follow in the shadows. Gray furs will require Naples Yellow, Black, Burnt Umber and White, the proportions being varied to suit the light and shade. A little Permanent Blue may be used in the half-tints.

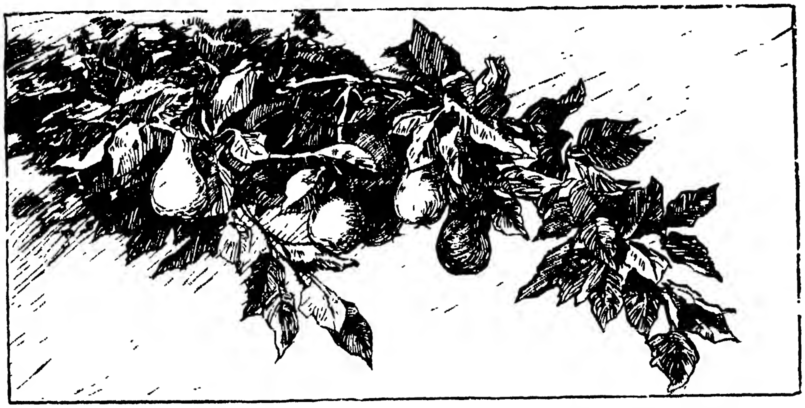


FIG. 130.—FRUIT STUDY BRANCH OF PEARS HANGING ON THE TREE.

The Pears are ripe and mellow. Lights and shadows should be broadly treated. A warm, greenish-gray background would be harmonious and suggestive of the outward surroundings.

LANDSCAPE AND MARINE PAINTING.

LANDSCAPE PAINTING.

I. SKETCHING FROM NATURE.

THE general principles of Landscape have already been dealt with so comprehensively under the head of WATER-COLOUR PAINTING that it will not be necessary to do much more here than explain the technical side of the subject, so far as the oil medium is concerned. Some repetition, however, will be unavoidable.

In sketching from nature, a folding easel and camp-stool, with two canvases the same size, which may be carried in a shawl-strap, will be found convenient. The colours, with brushes, charcoal, oil and turpentine, are compactly arranged in a neat, japanned tin box, in the lid of which a folding palette is fitted. It is wise to avoid elaborate paraphernalia, and to dispense with anything which is not absolutely necessary to the work in hand.

The Colours Needed for sketching are the following:—

Silver White.
Yellow Ochre.
Light Cadmium.
Vermilion.
Light Red.
Madder Lake.
Raw Umber.
Bone Brown.
Antwerp Blue.
Permanent Blue.
Cobalt.
Burnt Sienna.
Ivory Black.

Light Zinober Green is useful but not indispensable, as nearly the same effect can be obtained by combining Antwerp Blue with Cadmium, Vermilion, and White.

A More Complete Palette would be the following, which is rich and varied enough for every purpose of landscape or marine painting:—

Silver White.
Yellow Ochre.
Light Cadmium.
Deep Cadmium.
Naples Yellow.
Indian Yellow.
Lemon Yellow.
Light Red.
Indian Red.
Vermilion.
Madder Lake.
Permanent Blue.
French Ultramarine.
Ultramarine Ash.
Emerald Green.
Green Oxide of Chromium.
Terre Verte.
Brown Pink.
Raw Umber.
Burnt Umber.
Brown Madder.
Raw Sienna.
Cobalt.
Antwerp Blue.
Viridian.
Burnt Sienna.
Vandyck Brown.
Ivory Black.

Brushes.—Use the flat, in preference to the round ones, both in bristles and sables. Six of the bristles and four sable brushes of assorted sizes will be sufficient for all purposes.

The first studies should be of simple subjects, selected with a view to learning some special thing, such as the different forms of foliage, the character of tree trunks, and the manner in which the branches are attached to them. Bushes and vines also afford excellent practice; the many different aspects of sky and clouds furnish subjects of endless variety, which are always interesting. A strong effect of light and shade is desirable, as the violent contrasts of colour thus produced accentuate the forms of the foliage and branches, simplifying the task of painting them.

Preparatory Sketch.—The subject of the sketch having been decided upon, make a careful drawing in charcoal upon a piece of paper exactly the size of the canvas. This is to familiarise you with your subject before painting it. It is most desirable practice, for it is very unsatisfactory to have to make many corrections on the canvas, where there will be found other uses for the colours and brushes.

The Tracing. You may transfer the drawing to the canvas by tracing, if you prefer to do so. It is an excellent plan if you have the time. The operation is very simple. The back of the drawing is rubbed all over with charcoal, and the paper is then laid face upward upon the canvas and secured with thumb tacks. The outlines are then traced firmly with a hard-pointed pencil, and when the paper is removed a drawing in charcoal remains upon the canvas wherever the pencil has pressed. These lines must be immediately secured by drawing a dark lead-pencil or red crayon through them, as the charcoal will rub off with the slightest touch.

The next step is to paint in with Burnt Sienna and turpentine the general forms of the principal objects, indicating the masses of light and shade as broadly and simply as possible, without attempting any detail. This preparation, called the "rubbing in," will dry very quickly, and the canvas is then ready for the first painting.

The First Painting.—Begin with the upper part of the canvas, moving the brush from left to right. Of course there is no arbitrary rule about this, but a few such methodical habits formed in the early days of one's apprenticeship will be found valuable later.

The sky, presumably being the lightest note of colour in the picture, may be laid in first. Even if this should chance not to be so, and the clear blue is obscured by dark, stormy clouds, the same rule may be observed; for in any case, be the effect cloudy or clear, of sunshine or of storm, the sky will naturally give the keynote to the whole colour scheme of the landscape.

It is good practice to make some studies at first with only the simple blue sky tone, selecting for the purpose a day when there are no clouds and the sun shines brightly. It is of great importance in the first painting that you should obtain a pure transparent blue, which, while light and clear, will yet not be crude.

The Second Painting.—After the first painting has been successfully accomplished, the carrying on of the work depends more upon yourself than upon any formal directions that can be given you. Your own taste must suggest how much or how little detail to put into your sketch and just how much time to spend upon it; experience will prove the best counsellor in this respect. One artist, for example, will devote himself principally to the study of some fine colour effect, and may perhaps secure a brilliant result in one painting, while another, preferring to give more attention to the minor features of his subject, will continue to work an indefinite time upon the same canvas. But whether the time bestowed upon the sketch be long or short, one day or many, always endeavour to preserve a certain system in your methods; this includes a serious foundation of careful drawing for the beginning, more or less detail added as the work progresses, and a distinct determination toward completion in the last painting.

Finally, there will be a careful retrospection of the work on your canvas, with the adding of high lights here, darker shadows there; perhaps elsewhere the correction of a careless bit of drawing, the straightening of a line, the rounding of a curve—in short, leaving nothing undone which will give interest to, or add to the effect of, your picture.

This term "finish," which some people suppose signifies elaboration, may be very liberally interpreted. A picture might be finished from one painter's point of view, while for another it would be but half done; much depends, therefore, upon an artist's individual conception of a subject, and his ability to carry on the work further.

The safest rule is: Stop when you feel that you have done all that you know how to express on the canvas before you. To go beyond this involves the necessity of drawing upon the imagination to a certain extent, and your work becomes insincere, and consequently valueless.

Remember that you cannot put in everything you see, but try to select those details that will best serve to indicate the character of the object, while omitting others that are superfluous; details are generally seen in the half-tints, the highest lights and deepest shadows being left broadly massed.

After having acquired some experience in sketching from nature by making preliminary studies as we have suggested, you will feel better equipped for more ambitious work, and your sketches will take the form of compositions, comprising all that you have previously studied in detail. The problem as to just what part of the landscape may be made available for your purpose will confront you, and you will do well to bear in mind what we said (p. 88) about "some things to avoid."

II. THE SKY.

Paint in the sky of your picture at once. Two paintings may be necessary. In that case, the first should be lighter in tone than the sky is intended to be when finished. There is no rule for any given number of coats of paint. Should you be so fortunate as to secure the desired effect in one painting, beware of retouching this. Too much "working over" is likely to destroy the freshness of colour.

There is no particular rule to be followed in holding the brush; you must be guided to a certain extent by what you wish to express. If, for example, the sky is stormy, with heavy clouds, load your brush with a mixture of colours representing the general tone of the cloud, and in painting strike the full bristles firmly against the canvas, discharging (or unloading), on the desired spot, your colour in substantial masses, which you will instinctively smooth and blend together, following with the brush the forms of light and dark as you see them in nature. Sometimes, when the clouds show gently curved outlines against the blue sky, a long slender bristle brush may be used, and this is carried around the curved outlines with a steady sweeping stroke. No blending is required here. There are some effects, showing heavy masses of dark and light clouds rolling over each other and mingling in parts, to form a tone of warm, soft gray. In painting such clouds it is well to begin by laying in, with a full brush, two flat masses, one of light and the other dark, following closely the forms of the clouds. Remember that clouds have distinct effects of *light* and *shade*, and study the dark shadows with care, contrasting and comparing the values with the lighter portions. Sometimes the clouds appear thin and semi-transparent, showing the deep blue sky tone through their attenuated substance. In painting such cloud effects, allow the local blue sky tint to predominate in mixing the gray tones.

Hard outlines are to be avoided in drawing the clouds where they meet the sky, as this will cause a hard, metallic look never seen in nature. It is, however, proper to be careful in indicating the distinct form and character of each cloud as it floats over the blue ether. A good result is obtained by using a clean flat sable brush to soften the edges of the clouds against the under sky while the paint in both parts is still wet. The high lights of the clouds should be laid on with stiff colour containing but little oil, so as to give them the effect of brilliancy. They should be kept until the last.

Useful Palettes for Skies:—*Clear Sky.*—White, Cobalt, Naples Yellow, Emerald Green, Light Red.

Light Clouds.—Naples Yellow, Cobalt, Light Red, White.

Gray Sky.—Brown Madder, Cobalt, Naples Yellow, White.

Rain Clouds.—Indigo, Ivory Black, Umbers, Light Red, Yellow Ochre, White.

Gold and Red Clouds.—Lemon Yellow, Siennas, Madder Lake, Vermilion, Cadmium, White.

III. FOLIAGE.

In the first painting do not try to make your trees the conventional green you may imagine them to be. The ultimate effect will depend upon repeated glazings and subsequent paintings into the masses with passages of gray and green. The simplest method of painting foliage is to lay in flat masses of light and shade in medium tones, indicating the outlines of the leaves where the shadows meet the light; then, after the general effect is secured, add the high lights and deeper touches of shadow; also, put in any details of drawing which may be necessary, using a finely pointed brush for the stems.

There are various tricks of manipulation in the representation of foliage, such as working upon the wet paint with a well-worn hog-hair tool with much of the hair missing, what remains being of unequal length; or crushing the brush perpendicularly and flat upon the colour on the palette, and then, with a jerky movement loosely touching the canvas with the points of the hair. Afterwards these mechanical attempts at foliage, while the paint is still wet, are touched into the required forms by means of small sable or bristle brushes. Similar devices are employed to reproduce

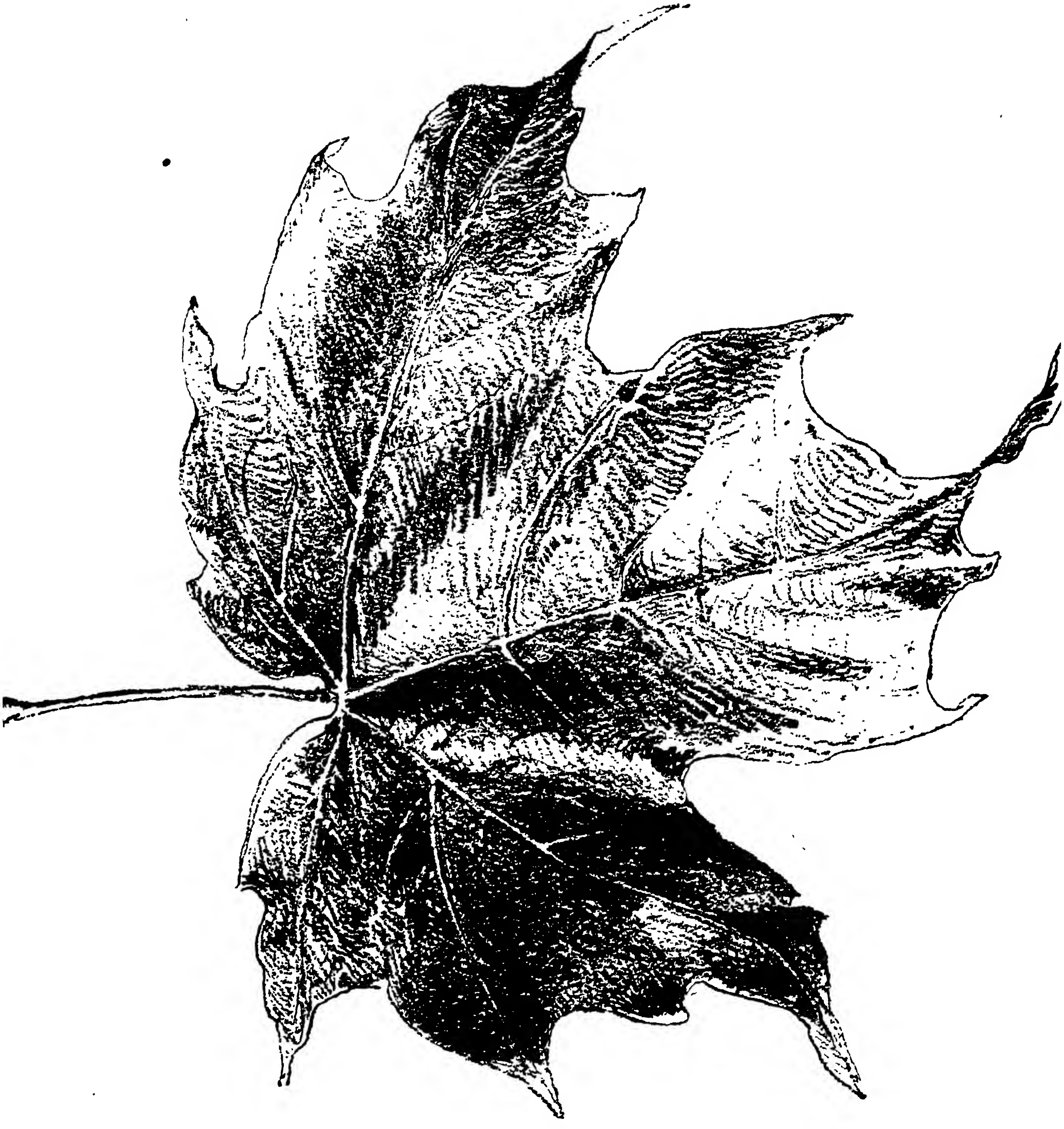


FIG. 131.—LEAD-PENCIL STUDY OF A MAPLE LEAF.

Although it is the business of the landscape painter to see foliage in the mass rather than in detail, and to indicate the general character of a tree rather than its particular species, every landscape painter worthy of the name will have sketch books full of such careful studies as the above. It is only when an artist is possessed of such knowledge of details that he may, by summarising them in his pictures, *seem* to ignore them. To ignore them without such knowledge will betray his ignorance.

irregular blades of grass or herbage, sometimes a pointed stick or the wrong end of the brush being used for this purpose. Any means are considered legitimate which will produce the desired effect; but we advise the novice to work as simply and directly as possible, and not to depend on such devices as these for his technique. He will be pretty sure to spoil his picture if he disregards this advice. Let him lay in the foliage in irregular blots, and with a small sable brush work them into more defined shape and with more variety of touch.

A Branch of Leaves is a simple model, and affords good practice for the landscape painter. A spray of ivy is comparatively easy; but variegated autumn leaves are most decorative. The spray illustrated on page 189 is of the richly coloured American maple—reds and yellows, greens and browns. The palette for them was set with White, Naples Yellow, Yellow Ochre, Vermilion, Rose Madder, Indian Red, Raw Sienna, Vandyck Brown, Zinober Green, and Cobalt Blue. A light yellowish background was made of Naples Yellow and a little Vandyck Brown; or Yellow Ochre and White, and a little Vandyck Brown would do. The stem is brown with purplish red lights: the leaf stalks are red, deep and bright, scarlet and crimson. The smallest leaf is bright yellow: the veins are Rose Madder.

Strong Sunlight Effect.—The following colours may be used in painting a landscape (with strong sunlight effect) to indicate the aërial perspective:—

Green Trees in Extreme Distance.—Mix White, Yellow Ochre, a little Ivory Black, Madder Lake, and a very little Cobalt. If the trees are very gray and indistinct, omit the blue.

Green Trees in Middle Distance.—Mix Permanent Blue, White, Yellow Ochre, Madder Lake, and Ivory Black for the *local* tone. In the *high lights*, which are subdued with gray, mix a little Light Cadmium with Madder Lake, Permanent Blue, a little Black, and White. The *shadows* here are painted with Permanent Blue, Yellow Ochre, a little Deep Cadmium, Raw Umber, and Light Red, adding Ivory Black and Madder Lake in the deeper touches.

Green Trees in the Foreground (in strong light).—For the local tone, mix Antwerp Blue, White, Medium Cadmium, Madder Lake, Raw Umber, and Ivory Black. In the *high lights*, mix Light Cadmium with White, Madder Lake (or a little Vermilion, according to the quality of the green), Raw Umber, and Ivory Black. In the *shadows*, mix Antwerp Blue with a little White, Yellow Ochre, Deep Cadmium, Burnt Sienna, Raw Umber, and Ivory Black. Where the greens are very brilliant, you may use some Light Zinober Green in the local tone, mixed with White, Vermilion, Light Cadmium, and a little Ivory Black.

If the greens appear very blue in quality, owing to the character of the trees, add Antwerp Blue to the other colours throughout. As there is so much variety in green foliage, you must exercise judgment in the use of yellows and blues, adding more or less of each colour to the local tone, as may be found necessary. Where the foliage is very gray, such as we see in willows, or dull and dark, as in some evergreens, you may omit the Cadmium and use Yellow Ochre.

The trunks of trees and branches in the extreme distance are generally very gray in colour and indistinct in outline, and should be compared with those in the foreground when painting.

Trunks and Branches in the Extreme Distance.—Ivory Black, White, Cobalt, Light Red, with a little Yellow Ochre.

In the Middle Distance the trunks and branches become more distinct and stronger in colour. Use here Bone Brown, White, Ivory Black, Madder Lake, a little Cobalt, and a little Yellow Ochre for the local tone, adding Burnt Sienna in the shadows, with more black and less white. The high lights may be painted with White, Yellow Ochre, Bone Brown, Light Red, and Cobalt.

Trunks and Branches in the Foreground are conventionally more distinct and stronger in colour, though a ray of sunlight may entirely reverse all these conditions. The colours used

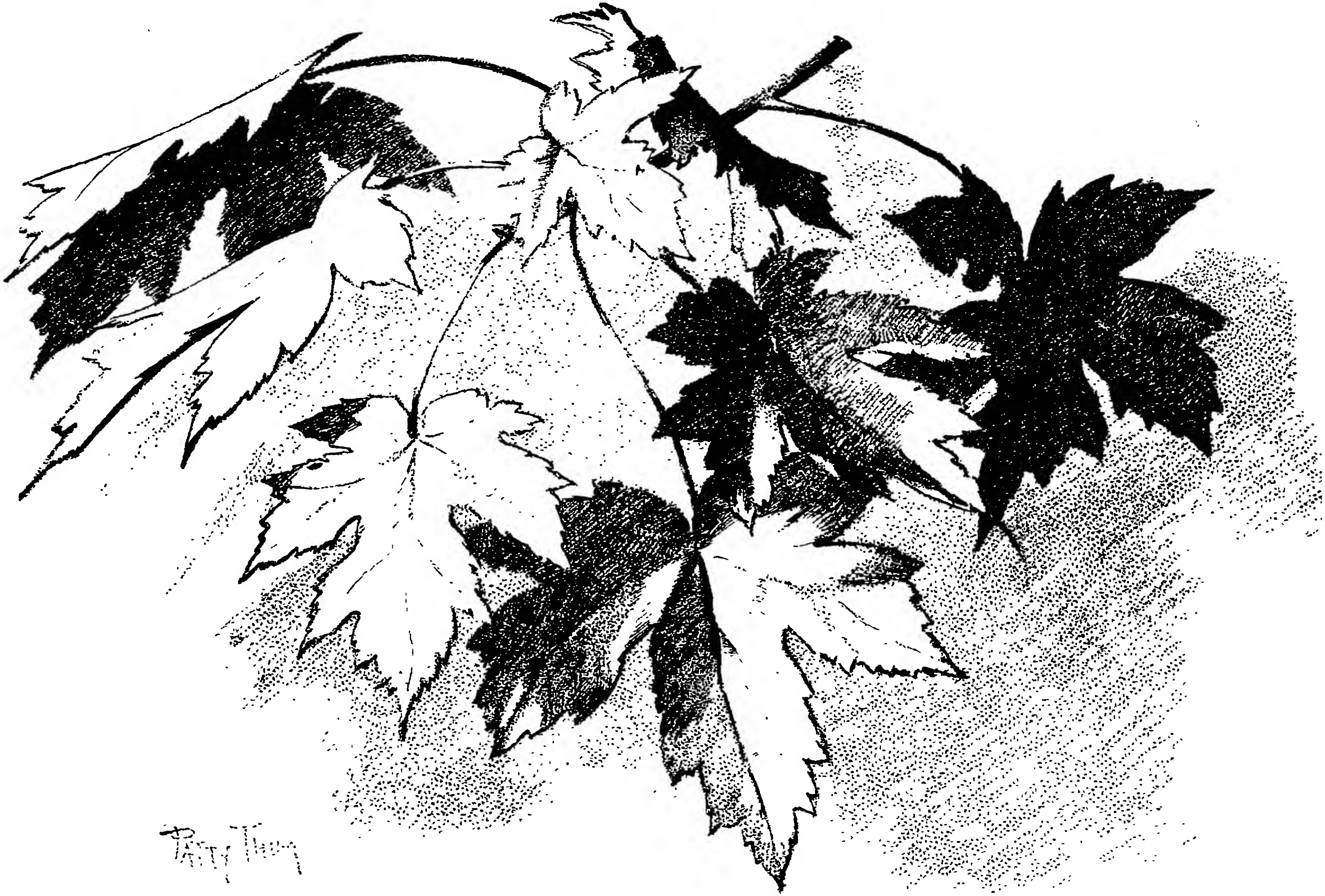


Fig. 132.—Study of Maple Leaves in Autumn. For Suggestions for Treatment, see opposite page.

under ordinary circumstances would be Raw Umber, White, Yellow Ochre, Cobalt, Light Red, and a little Ivory Black for the *local tone*. For the *shadows*, mix Bone Brown, a little Yellow Ochre, a little Cobalt and Madder Lake, adding Burnt Sienna and Ivory Black for the deeper touches. The *high lights* may be painted with a brownish-gray tone made with Ivory Black, a little Yellow Ochre, White, and Madder Lake. If the sun strikes across the branches, add a little Deep Cadmium in the lights, and use more Cobalt in the half-tints.

Useful Palettes for Distances.—*Distances.*—White, Cobalt, Ivory Black, Indigo, Cadmium Yellow, Madder Lake, Raw Umber, Light Red, Naples Yellow, Emerald Green, Terre Verte.

Extreme Distance.—Cobalt, glazed with Light Red, or Indian Red, or Madder Lake, or Brown Madder, or Burnt Sienna.

Middle Distance.—Raw Umber, Burnt Umber, Cadmium, Raw Sienna, Burnt Sienna, Light Red, Indigo.

Distant Rocks.—Indigo, Cobalt, Ivory Black, Light Red.

Distant Mountain Sides.—Cobalt, Yellow Ochre, White.

Lights on Distant Mountains. — Naples Yellow, Cobalt.

Distant Fields or Meadows.—Yellow Ochre, Naples Yellow, Madder Lake, Cobalt, Indigo.

IV. SUNSET.—WINTER SKY.

Upon a clear summer evening the light seems to linger upon the earth quite long after the sun itself has bodily disappeared below the distant tree-tops; and it is in these moments that some of the richest and most paintable effects are to be noticed. The withdrawal of the actual sunrays dispels all the strongly marked forms of light and shadow; the warm, diffused light penetrates everywhere. Each object appears to be replete with its own peculiar colour, uninfluenced by its neighbours, and assumes an integral part of the pervading richness of tint shown at no other hour of the day.

All local colour is thus curiously intensified by this diffused gold. We feel tempted to glaze our canvas with Aureolin, but realise in despair that nature's gold is not a flat tint, but a luminous atmosphere; so we humbly endeavour to represent this fact by mixing Deep Cadmium with our dull greens, adding Madder and Cobalt where sombre shadows are turned to fine purple; while for the brown tree trunks, which now appear almost dyed crimson, we add a larger share of Madder Lake, with more Yellow Ochre than usual, in the lighter parts. A little Ivory Black must be used to qualify even the brightest colouring, or there will be no "atmosphere." The half-tones, with their harmonising grays, must be well in place if these gorgeously coloured objects are to be kept in their planes. Remember that the sky tints are naturally clearer, higher in key, and more brilliant than anything upon the earth below them; and here the colours would seem to culminate.

To illustrate this, let us take, as an example, such a sunset scheme as one sees often (with variations) upon a clear, warm evening in midsummer. As a guide for the beginner, the present writer will copy here the notes of an impression exactly as they were jotted down in his sketch-book:—

Composition.—Upright canvas, two-thirds sky; one-third of whole space is foreground.

Distance.—Row of trees meet sky, bordering a narrow stream parallel to horizon line.

Middle Distance.—Wide earth roadway, with straggling tall bushes and scrubby underbrush on either side, running out of picture plane in the immediate foreground; here one sees also long grass and feathery-topped weeds carpeting the ground between the dwarf oaks and stunted cedars. The old road-bed, originally of common reddish clay, now idealised through reflections from the sky, shows pearly gray half-tints and claret-coloured shadows, while each rough clod, whose rugged outlines catches a glint of the golden light, is transmuted into a nugget of pure gold.

At the horizon line the row of dull evergreens (which we had studied at noonday) now appears softly relieved against the level bank of purple cloud, which stretches down to meet the uneven line of hilly ground.

First: Above this purple there comes a narrow belt of vivid orange; *second*, a slender band of pale gold; *third*, a broad stripe of pure yellow-green; *fourth*, a great, dull, flame-coloured cloud spreading up into a russet gray mass.

The picture plane ended here. The colours which, combined, will give these tints, may be tabulated thus for the convenience of the student:

The level bank of purple cloud may be painted with Ivory Black, Cobalt, a little Madder Lake, a little Raw Umber.

First, the vivid orange tint: Mix Deep Orange Cadmium, a little Madder Lake, a little Ivory Black, White.

Second, the pale gold: Yellow Ochre, Light Cadmium, White, a little Vermilion, a very little Raw Umber.

Third, pure yellow-green stripe: Pale Cadmium and Permanent Blue: a touch of Vermilion, and a very little Ivory Black with White: Antwerp Blue may be used here instead of Permanent Blue, if preferred.

Fourth: the flame colour is made with Yellow Ochre, White, a little Madder Lake, Medium Cadmium, shading into russet gray, with Raw Umber, Ivory Black, Burnt Sienna, Cobalt, and Madder Lake. If there should chance to be visible in your plane a bit of the rich purple blue overhead, you may arrive at this difficult tint by mixing Permanent Blue, a little Light Cadmium, White, Madder Lake, a touch of Yellow Ochre, and a little Ivory Black. Work these colours together as little as possible; keep them moist, and sweep them into the canvas with a large flat brush, blending them slightly as the pigment spreads. A few streaks are much better than a flat, even, tired-looking tone, without any transparency. Use as little medium as possible, as the colours should not be thinned, but, on the contrary, loaded with a full brush in painting skies.

Never wait until it is seen what kind of sunset it will be; prepare beforehand, and seize the impression while possible. Have at hand several sizes of canvas, panel, academy board, or oil sketching paper, your oil cup replenished, clean brushes, and the paint-box. As soon as the sky begins to assume a sunset tint, go to the place selected, if near (otherwise start proportionately early); place the best-suited size and shape of material selected in position. The colours to be used will now be indicated, and they should be placed upon the palette quickly. About the proportions needed are now plainly seen. Strengthen while painting, by dipping the brush in the pure colour or colours required to produce the correct shade or glow. Avoid putting white, even when broken with red and yellow, over colours, as it is apt to produce a thick, opaque, glazed appearance, very undesirable. Place the darker shades over the lighter, as a delicate atmospheric effect is thus obtained. Of course sometimes the edges of clouds must be retouched with bright tints, and sometimes a bright cloudlet or two swim in a darker ground, which it is easier and more natural to touch in; but begin with the light tint, and then lay on the shadow. We know of no other or simpler way in which a clear, soft sky may be obtained; as the light seems to come through all skies, even stormy skies.

It will be found advisable to study sunset tints theoretically before trying to do so practically, and in imagination paint every sunset sky, tender or gorgeous, presenting itself.

A Winter Evening Sky, gray at the zenith, pale blue at the horizon, with small cream-coloured clouds above a broad band of yellowish red—this aspect is familiar enough to be somewhat typical. Use for the gray clouds White, Yellow Ochre, Raw Umber, a little Cobalt, Madder Lake, a very little Ivory Black, adding Burnt Sienna in the shadows, with less White and Yellow Ochre. For the highest lights use White, a little Yellow Ochre, a very little touch of Madder Lake, and the least bit of Ivory Black. Paint the high lights boldly, with a good-sized flat bristle brush, and do not blend. The little clouds are painted in the same manner, with more Yellow Ochre and less of the Cobalt, Raw Umber, and other qualifying colours. The pale blue tone of the sky is painted with Cobalt, White, a little Light Cadmium and Madder Lake, qualified by a very little Ivory Black. The yellowish-red tones may be painted with either Light or Medium Cadmium, according to the tone desired, with White, Madder Lake, and a little Ivory Black. To these colours can be added, if desired, a little Cobalt, Raw Umber, Vermilion, or Burnt Sienna, according to the effect you wish to produce. More or less White is of course added as it may be needed. Do not blend the tones where one colour melts into another, but unite the edges of these tones with a medium-sized flat flexible bristle brush.

V. EARLY MORNING.—AUTUMN.

On fine mornings in autumn, just after the sun has lifted itself over the horizon, beautiful effects of colour may be observed. There is a dewy freshness upon every leaf and blossom in these early hours, which disappears later in the day when the brilliant beams have dried up all moisture. Faint, misty, violet-coloured shadows float beneath the trees, their rainbow-tinted edges scarcely seeming to touch the earth, though, as the sun rises higher and their outlines become more clearly defined, they settle down into place among the yellowing blades of grass. As with the changing light the time for securing this effect is limited, it is a good plan to have ready upon a canvas (sketched in the day before) the general outlines of that particular bit of landscape you have decided to paint. You have in this way the advantage of knowing just where to place the fresh tones, unencumbered with the labour of preliminary drawing. Much valuable time is saved, and you may devote yourself satisfactorily to securing the colour impression. There are some mornings when a slight humidity prevails, just enough to soften the sharp outlines of the trees into a picturesque vagueness. There is no distinguishable horizon line, but from out this universal mistiness the sun, shorn of its rays, rises glowing like a huge, uncut ruby set in mother-of-pearl. Overhead the morning sky is pale blue, dotted with little gray, rose-tinged clouds.

As the light grows stronger the whole surface of the grass fields takes on lovely subdued tints of pink and violet, while a delicate silvery sheen clothes the long weeds, and sparkling dew-drops hang like jewels on the clover blossoms.

Such an early morning effect was witnessed by the present writer, who, having taken notes of it, now transmits them for the benefit of the reader, and adds the list of colours which may be useful to him later in painting from memory.

An upright canvas of medium size, measuring about 12 x 15, is an agreeable proportion. As the sky in this composition is the principal object of interest, the foreground occupies a comparatively insignificant proportion. We therefore place the horizon line low—let us say about ten inches from the top of the canvas. Of course this line may be varied, according to the interest in the foreground plane, these proportions being suggested as a guide.

Begin your painting at the top of the canvas, laying in first the blue sky with its light clouds, working gradually down to the horizon line. This line we will paint out entirely when the canvas is covered, but it is necessary to refer to it in order to keep the boundary of the earth horizontal. Nothing looks worse than to see a picture with a crooked or sloping horizon line, and some tolerably good painters are careless about this.

Autumn Sky and Foliage.—*Blue Sky.*—Permanent Blue, White, a little Light Cadmium, a little Madder Lake, a very little Ivory Black. *Mix the colours in the order given.*

Clouds.—A general tone of gray is made with White, Yellow Ochre, a little Ivory Black, Cobalt, and Madder Lake. If the clouds are tinged with *pink*, add a little Vermilion to the Madder Lake and deepen the proportion of red. If the clouds are *purple*, add more Cobalt and Madder Lake to the local tone. If a *golden* tint is seen, add some Light Cadmium to the Yellow Ochre and use less black, omitting the blue. Where the gray local tone of the cloud becomes deep in colour and shades into dark brown or heavy blackish tints, add Raw Umber, Burnt Sienna, and Permanent Blue as may be required.

The Sun.—A tint of reddish gold, made with Madder Lake, White, a little Deep Cadmium, a very little Raw Umber, and Ivory Black. The misty tones surrounding the sun at the horizon are made from the colours given for the gray clouds, but showing more Yellow Ochre and Madder Lake. Where these tones meet the earth more Black and Raw Umber are used.

Distant Greens.—In the extreme distance the greens of grass and foliage appear very gray and purple. The colour begins to grow brighter in the middle distance, but is still subdued. Mix for this, Permanent Blue, with White, Yellow Ochre, Madder Lake, and a little Ivory Black. In the *middle distance* strengthen these same colours, mixing with them more blue. Add also some medium Cadmium and Raw Umber in parts. In the *immediate foreground*, though still somewhat gray in quality, the greens, being nearer the eye, will be brighter and warmer, and all the colours appear livelier.

The effect of iridescence—where the light strikes through the heavy dewdrops—is obtained by small, brilliant touches of pure colour mixed with a very little warm gray. It is better to keep a quantity of this gray tint mixed at one side of the palette, and add a small proportion of this when needed to give "quality" to the pure colours. Use a strong, fine-pointed sable brush full of pigment. Put the paint on lightly, giving *one* sharp well-studied touch at a time only, dragging the brush a little if a longer stroke is needed on the edge of a leaf or along the sharp outline of a tall grass blade. Learn to poise the brush in your hand somewhat like a spear, so that you may aim it to strike the canvas just at the spot you wish to plant the tone; then withdraw it again immediately. If the colours are in the right places, this crisp handling will produce a sharp, brilliant effect of light, which is lost by blending.

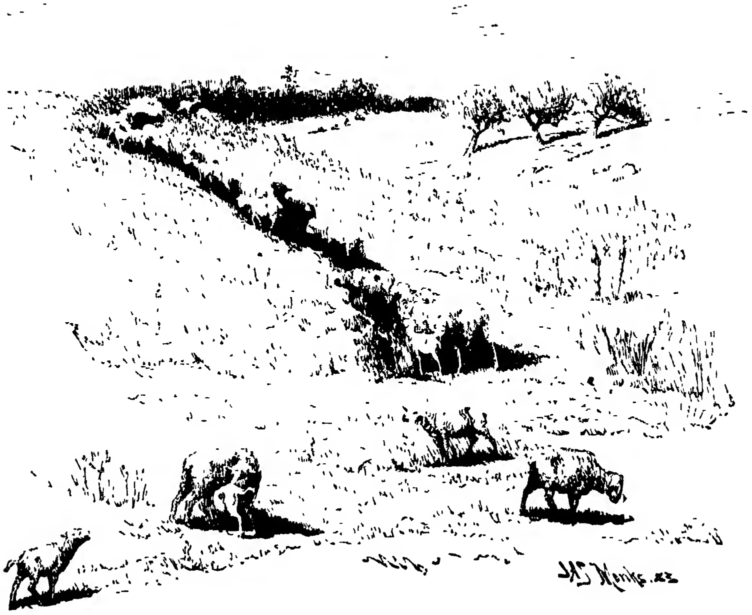

J.H.S. Monks. sc.

FIG. 133.—COMPOSITION OF LANDSCAPE AND SHEEP. BY H. S. MONKS.

Early Autumn Foliage.—The foliage, just before the autumn changes come, appears monotonous in its general effect; light leaves of willow and maple turn dark and opaque, while the richer pines and cedars are mellowed into a yellower quality or dried out into a dull, dusty gray-green, which gives them a lighter value when seen in the mass, with their gay little pointed cones peeping forth from every possible angle. Painted at high noon, when the lights and shadows bring out their intricate forms, these evergreens are charming subjects for study, with their sharp points defined against a clear blue sky. Strong, rich colours are needed for painting these trees in autumn, when they are washed clean by the heavy rains. In the general tones we may use Antwerp Blue, White, Burnt Sienna, Yellow Ochre, and Deep Cadmium, with some Ivory Black and Madder Lake in the richer parts.

When the first frost comes there is no more monotony to complain of; the dull grays and greens of maples and beeches have turned into scarlet and gold, while rich masses of crimson and purple fill the shadows. It is a difficult task for the beginner to know just what colours he shall choose from his box to represent these wonderful tints; no single one seems to be exactly what is needed; it therefore follows that certain colours must be combined to produce the desired effect. The following hints may therefore be found of use:—

Bright Scarlet Foliage.—Vermilion, White, a little Light Cadmium, with a little Ivory Black in the lightest tones. For the shadows use Madder Lake, Raw Umber, Yellow Ochre, and a little Black.

Crimson Leaves.—Madder Lake, a little Yellow Ochre, Raw Umber, and Ivory Black, adding Burnt Sienna and a little Permanent Blue in the shadows. In the highest lights Vermilion may be added, while Bone Brown and Madder Lake will deepen the richer shadows.

Pale Yellow Leaves.—Mix Cadmium (Light), White, a little Vermilion, and a little Ivory Black. In the shadows use Raw Umber, Yellow Ochre, and Madder Lake.

Orange-coloured Leaves.—Deep Cadmium, White, a little Madder Lake, Bone Brown, and a little Cobalt for the local tone. In the shadows use Yellow Ochre, Burnt Sienna, a little Orange Cadmium, and Bone Brown, adding a very little Ivory Black in parts.

Brown Leaves.—Mix Bone Brown, White, Yellow Ochre, Ivory Black, and Madder Lake for the local tone, adding Burnt Sienna and a little Cobalt in the shadows. In the grayish high lights a blue or violet tone is often observed, which gives variety. For this use White, a little Light Red, Cobalt, and Yellow Ochre, modified with Ivory Black. Endeavour to paint these leaves in masses as they lie on the ground, and without attempting to outline them definitely, yet preserving a certain amount of variety in form and colour. The shadows beneath them will naturally partake of the colour of the earth or withered grass upon which they lie, and should be closely studied from nature if possible.

VI. MOONLIGHT.

There can be no such thing as a direct colour transcript from nature of this most elusive theme. One must rely chiefly on *observation* and *memory*. Such being the case, we suggest the following as an excellent plan for study practice of moonlight effects. Having selected by *daylight* the scene of your sketch, with the proper effect of light and shade, make a careful drawing of the composition in charcoal, followed by a broad, simple painting suggesting the general effect of colour throughout. Armed with this preparation, which has familiarised you with the natural coloration of the objects as seen by sunlight, you approach later the same subject shown by the colder light of the moon, but with a predisposition to look for colour wherever you may find it beneath the transmuting silvery rays. Knowing thus just where it is, your brush will feel its influence, and in the picture will give us a view of nature, not barren of colour, but rich in suggestion of it.

After what we have said of the impossibility of a direct transcript from nature of a moonlight effect, and in view of the necessarily varying conditions attending every phase of the theme, we give the following suggestions for colour combinations, with even more than the usual reserve:—

A Conventional Moonlight Scene of rocks, a stream of water somewhat ruffled, and a few broken clouds, is a favourite composition. Use for the dark, blue-gray sky Permanent Blue, Ivory Black, Yellow Ochre, a little White, and Madder Lake. The moon is painted with Light Cadmium, White, a little Madder Lake, and a very little Ivory Black. The rocks, which will appear very gray, though richer and browner than the water, are painted with Bone Brown, Raw Umber, Yellow Ochre, White, Madder Lake, a little Permanent Blue or Cobalt, and a little Ivory Black, adding Burnt Sienna in the shadows. Paint the water with Raw Umber, a little Permanent Blue, and Ivory Black, White, Yellow Ochre, and Madder Lake. Lay in the general tone first, and break the touches of bright light in afterward, while the colours are still wet. Remember that everything appears gray in the moonlight.

A variation of the effect would be to paint the moon with Yellow Ochre and White, and the atmosphere about it with Yellow Ochre, White, Black, and Cobalt. For the upper sky use Indigo, Black, and French Ultramarine; Indigo, Black, and Vandyck Brown; or Indigo glazed with French Ultramarine. For the clouds Ivory Black and French Ultramarine; Sepia; Brown Madder and Sepia.

VII. WATER.

Water must be painted broadly in the same way as the sky, and it can be laid in at the same time; but the tints will be paler. Masses of light are laid in at once. What has been said under this head, in WATER-COLOUR PAINTING, about the colour of water under various conditions, applies equally to painting in oil colours. The following suggestions for colour combinations will be found useful :—

Streams. *Dull Gray Water.*—Indigo and Brown Madder; Cobalt, Indigo, Brown Madder; Cobalt, Yellow Ochre, Brown Madder.

Dark Steely Blue.—Cobalt and Indian Red; Cobalt, Madder Lake, Yellow Ochre.

Greenish Water.—Raw Sienna and Indigo; Cobalt and Yellow Ochre; Indian Yellow and Vandyck Brown; Indian Yellow, Burnt Sienna, Indigo.

Yellowish Water.—Raw Sienna; Raw Sienna and Brown Madder; Raw Sienna and Vandyck Brown.

The Sea. *Deep Blue Distant Water* seen on a clear day may be represented with Ultramarine, Viridian, and Burnt Sienna, with a little White. For the middle distance the same colours can be used, allowing the green to predominate.

The Red Tint of the Sea, which sometimes comes from the presence of seaweed, can be given by the use of Brown Madder.

Grayish-toned Water.—Cobalt and Light Red; Ultramarine and Ivory Black; Ultramarine, Indigo, and Madder Lake.

Greenish-toned Water.—Burnt Sienna, Cobalt, and Madder Lake; Burnt Sienna and Vandyck Brown; Light Cadmium and Ultramarine; Raw Sienna and Cobalt; Raw Sienna and French Ultramarine; Raw Sienna and Ivory Black; Raw Sienna and Crimson Lake, for lights; Raw Sienna and Vandyck Brown, for lights; Vandyck Brown, Indigo and Indian Yellow; Indian Yellow and Cobalt; Indian Yellow and Vandyck Brown; Cobalt and Yellow Ochre, Cobalt and Indian Yellow; Cobalt, Black, Vermilion.

Waves.—Near the Shore the greens are quite pronounced and sometimes very brilliant. Indian Yellow might come into play here. Brown Madder will also be necessary in some shadows and reflections.

The Sand may be painted with White, Yellow Ochre, Burnt Sienna, and a little Blue Black.

Rocks and Cliffs.—Cobalt and Light Red; Cobalt and Burnt Umber; Cobalt, Brown Madder, and Raw Umber; Cobalt, Madder Lake, and Ivory Black; Ivory Black and Madder Lake; Indigo; Indigo and Raw Umber; Indigo and Light Red; Indigo and Burnt Umber; Indigo and Brown Madder; Indigo and Indian Red; Ultramarine and Ivory Black; Vandyck Brown, Black, and Brown Madder; Vandyck Brown, Cobalt, and Madder Lake; Raw Umber and Ultramarine; Burnt Umber, Cobalt, and Madder Lake.

Shores and Roads.—Raw Umber and Vermilion; Vermilion, Yellow Ochre, and Cobalt; Raw Umber and Yellow Ochre; Burnt Sienna; Burnt Sienna and Black, for shadows; Brown Ochre and Brown Madder; Vandyck Brown, Cobalt, and Crimson Lake; Yellow Ochre and Light Red; Yellow Ochre and Vandyck Brown; Yellow Ochre, Light Red, and Madder Lake; Yellow Ochre, Light Red, and Indian Red; Cobalt, Madder Lake, and Burnt Sienna; Yellow Ochre, Madder Lake, and Cobalt; Light Red and Black; Crimson Lake, Ultramarine, Burnt Sienna; Raw Sienna and Vermilion; Ultramarine and Brown Madder, for shadows; Ultramarine, Burnt Sienna, and Crimson Lake, for shadows; Indian Yellow and Burnt Umber, for shadows.

VIII. FIRE AND SMOKE.

In painting the colour of fire, the effect of the flame should first be carefully studied from nature, as the colour will depend greatly upon the surroundings and what is placed behind it. In a large wood fire burning in an open fireplace, the colour of the flame will overpower anything behind it, concealing the bricks or stone which may be there; these will very often be blackened by the flame, and the relation here should also be closely observed.

Fire.—The colours for the actual flame will be Cadmium, Light and Dark; Vermilion, White, Raw Umber, and a little Ivory Black. Permanent Blue or Cobalt is added in the blue half-tints, and is used with the other colours at the tips of the flame.

Smoke.—Use Ivory Black, White, Yellow Ochre, Madder Lake, and Cobalt. Make this transparent by indicating in parts the colours of the objects, or background.

If the latter should be forest trees or grass seen in the open air, mix a little of the green with the local tone of the smoke at the edges and where it blows *thinly* over the landscape. If, however, the smoke is heavy and thick, and ascends in a cloud to the sky, it should be painted as it will appear according to the effect of sunlight. If the sky is gray and cloudy, the smoke may appear white and fleecy against it; but if the sky is clear and blue, the smoke will often have a distinctly darker value. If the volume of smoke is heavy and comes in "puffs," this will be partly in shadow, appearing almost like a cloud or a series of small, thick clouds. In this case there will be a distinct series of high lights and corresponding shadows in the smoke, depending, of course, upon the quality and colour of the material used in making the fire; the smoke from coal and wood being entirely different at times in colour and texture. The smoke from some factories will look like an inky cloud, while close beside it, that from a pile of wood may be pale, transparent blue, like a sapphire; and some passing steamboat on the river perhaps projects a soft cottony mass, with pearly lights and no shadows, into the sky.

Steamboat Smoke.—For this white smoke use White, Yellow Ochre, Cobalt, Madder Lake, and a little Ivory Black.

Factory Smoke.—In the heavy black column from the chimneys use Black, White, Burnt Sienna, Permanent Blue, and Yellow Ochre, and where it appears gray and brown in parts add Raw Umber and Madder Lake.

IX. SNOW AND ICE.

Perhaps the nearest approach to an individual coloration for "snow"—often asked for by beginners—may be found in the forenoon, when the sun is not actually shining clear, so that we have no *definite* lights and shadows; and yet there is sufficient illumination to "bring out" all the local tones of the landscape.

Palettes for Snow Scenes.—*The Sky* covered with soft clouds, showing patches of blue between. At the *horizon*, beneath the clouds, is seen a strip of light greenish blue.

The Blue Tints.—Mix Permanent Blue, White, Yellow Ochre, a little Pale Cadmium, a little Madder Lake, and a very little Ivory Black. Put the colour on thickly, beginning at the top (upper left-hand corner) and work gradually down toward the horizon line. If there are trees or shrubbery here, the greens will be very gray in colour; and if these trees should be evergreens, they will appear in dark and sombre masses against the transparent sky. No sharply defined outlines will be seen, and the foliage is treated simply in broad, flat planes.

The Distant Evergreens may be painted as follows:—For *the local tone* mix Permanent Blue, White, a little Deep Cadmium, Madder Lake, Ivory Black. In the high lights, which are gray and purple in tone, use Permanent Blue, Yellow Ochre, White, Raw Umber, and Madder Lake.

The Tree Trunks are dark greenish brown, with gray lights and half-tints. Paint these trunks and the branches with Bone Brown, Cobalt, a little Yellow Ochre, and a little Ivory Black.

When laying in the snow, it is better to cover the whole ground at one painting if possible, in order to establish the general effect of colour; the details can then be finished off at leisure. If this is neglected, and the student attempts to paint his sky on one day and his foreground on another, he will find that the two may not hold together well.

When the general surface of the snow is yellow-white in quality, one may use for the *local tone* White, a little Yellow Ochre, a little Raw Umber, Cobalt, and Madder Lake.

For the ordinary warm gray shadows mix a little White with Raw Umber, Ivory Black, and Burnt Sienna. In the deeper touches of warmer shadow a little Madder Lake may be added.

For very deep purple shadows more Cobalt and Madder Lake are added to the local tone.

The *high lights* on the snow are painted with White, a little Yellow Ochre, a little Vermilion, and a very little Ivory Black.

When the surface of the snow shows the faintly pinkish quality seen under rich brown clouds, some Light Red may be added to the local tone and Bone Brown used in place of Raw Umber. For the early morning effect under a clear sky where the shadows are delicate *violet blue*, the oil colours used will be Permanent Blue, White, a little Madder Lake, and Ivory Black.

When the vibrating tints are observed in strong sunlight, suggesting prismatic hues, add faint touches of Cadmium, White, Yellow Ochre, Vermilion, and Madder Lake with White, adding a *very* small quantity of Ivory Black to these combinations, in order to give the proper quality. Paint in these tones where the shadows meet the lights, and soften the edges slightly with a clean, flat sable brush. If the tints appear too cold, add a little Yellow Ochre.

Pine Trees, half covered with snow, are often part of a snow landscape. For the local tone of the *trees* a dull green tint, qualified by gray, is mixed with Antwerp Blue, White, Yellow Ochre, a little Deep Cadmium, Madder Lake, and Ivory Black. In the shadows use Antwerp Blue, Burnt Sienna, Raw Umber, and Ivory Black. For the lights a cooler tone of green is made with Permanent Blue, White, Yellow Ochre, Madder Lake, and Ivory Black. In parts Raw Umber is added, and where warm lights are seen, Cadmium may be substituted for Yellow Ochre. The brownish gray branches are painted with Bone Brown, White, Yellow Ochre, and Permanent Blue, adding Burnt Sienna and Ivory Black in the shadows. Use a fine brush in finishing the smaller branches and in painting the lines of snow which cover them.

Shadows on Snow.—The colours needed for the painting of shadows on snow are White, Yellow Ochre, Madder Lake, Cobalt, Raw Umber, and a little Ivory Black. The shadows should be kept distinct in form, pure in colour, and *flat* in modelling, with very little blending along the edges, while at the same time a hard outline should be avoided. In painting large masses of shadow, the colour should be mixed in a sufficient quantity on the palette in the first place, as it is often difficult to match the same tone exactly, and a "patchy," unequal effect is the result, instead of a transparent tone.

ANIMAL PAINTING.

I. CATTLE.

THE general observations made in previous chapters concerning the painting of animals are of course not restricted to water-colour painting.

For a first attempt at cattle painting in oil colours, make a study of a head from life. Devote the first day's work to the drawing only, which do in charcoal. Let us suppose your model to be a white cow or steer.

Go over the outlines and general mass of shadow with Burnt Sienna and Ivory Black mixed with turpentine. While this is drying, put in the background. For this, use White, Yellow Ochre, Raw Umber, Permanent Blue, and Light Red, adding a very little Ivory Black. In painting the head, first lay in the light part in one general tone of warm, delicate gray, then paint the shadow in the same way, with one flat mass of a darker medium shade of gray. After this the high lights and other details are added to the light mass, and in the general tone shadows are painted the deep accents, such as folds in the neck, etc.; also any details which may be necessary. Use for this light tone White, Yellow Ochre, a little Ivory Black, Cobalt, and Light Red. In the shadows substitute Burnt Sienna and add Raw Umber. Paint the nose with Ivory Black, Burnt Sienna, Permanent Blue, and White. For the eyes, use Burnt Sienna and Black, with a little Vermilion, White, and Raw Umber in the red touches in eyes and tongue. Paint the horns with Raw Umber, Yellow Ochre, White, a little Ivory Black, and Burnt Sienna. Use flat medium bristles for the general painting, and flat-pointed sables Nos. 5 and 9 for details.

After having studied the head, limbs, and entire figure of an animal at rest, take a small sketch-box with a thumb-hole, such as is used for water-colour sketching, three or four bits of canvas only large enough to fit into the cover of the box, some small square brushes, and the few pigments which, by this time, you know are absolutely requisite. Then, allowing your model to remain at liberty, follow it, making studies of movements and of effects of light and shade as they happen. There are a great variety of actions to be observed: rising, lying down, walking, running, drinking, bellowing. And the effects of light, particularly on particoloured animals, are numberless. Among these little sketches will be a large number made simply for effect. Tones and values should be exactly rendered in them, and the background should receive almost as much attention as the main subject.

Begin with the sky, then put in the background with as few strokes of the brush as possible, leaving room for the cattle, which must be painted in the same manner, suppressing details, but giving strictest attention to their relative values. Finish with the foreground. It is these little studies which, in course of time, will suggest pictures. Look at the subject with the eyes nearly closed, in order to see only the general tones, and force yourself to finish your sketch within a quarter of an hour.

Black Cattle.—A useful palette consists of Ivory Black, a little Madder Lake, Permanent Blue, and Burnt Sienna. In the lights Yellow Ochre is added and the Blue omitted.

Red Cattle.—Light Red, Raw Umber, Indian Red, Yellow Ochre, and Ivory Black may be employed. In the high lights and half-tints add a little Cobalt. Madder Lake may be substituted for Light Red in the deeper shadows. Burnt Sienna is also used.

White Cattle.—For the medium gray mix White, a little Ivory Black, Yellow Ochre, and Light Red, with Cobalt in the bluer parts.

Dark Brown Cattle.—Ivory Black and Crimson Lake; Burnt Sienna and Black; Burnt Sienna, Crimson Lake, Indigo; Vandyck Brown; Vandyck Brown and Crimson Lake.

Light-coloured Cattle.—Burnt Sienna; Light Red; Yellow Ochre and Light Red; Yellow Ochre and Burnt Sienna; Yellow Ochre and Vermilion.

Sheep.—For the first painting (dead colouring) use Burnt Umber for the dark parts, and Ivory Black, Light Red, and White for the lighter parts. In the second painting use the same colours, adding Yellow Ochre and White for high lights.

II. DOGS.

Select for your model a pose that previous experiment has found successful, and then decide upon the background. Something that can be arranged in a studio is easier than what belongs to outdoor aspects. A screen of a tint harmonising with the colour of the subject is always desirable. The coats of dogs take on colours ranging from white, through the yellows, reds, and browns, to black. The background should be painted to retire, and have a general tone darker than the lights of the picture and lighter than the shadows. Bluish and olive tints go well with light-coloured dogs; russet, yellowish and reddish tints with dark ones. The colour should be laid on in a broad, broken style; not flat and uniform, or there will be a lack of atmosphere.

Colour Combinations.—For some of the pure-blooded dogs, colours may be specified. There is the Irish setter, which needs Burnt Sienna and Venetian Red for the local colour, Vandyck Brown and Brown Madder in the shadows, White and Roman Ochre brought on the local colour for high lights, and the same, qualified with Cobalt and Black, for the intermediate grays. These silky, wavy coats should be painted in with easy, sweeping strokes; their varied tones, as affected by light and shade, being decided upon beforehand, and not changed by subsequent manipulations. Similar colours appear in spots on many of the short-haired dogs, especially hounds. Some require less red and more Yellow Ochre and even Cadmium. Then the shadows are cooler, inclining to greenish, and the grays partake of the same character. When the spots are more of a brown, the lights are purplish and the shadows warmer. Where white and black come in as local colour, the grays are cool, rather bluish, and the shadows warm, except on edges. Vandyck Brown (or Bone Brown, or both combined) is useful in the shadows; smooth, black coats take blue reflected light.

There is a fawn colour belonging to the mastiff, the St. Bernard and, in part, to the pug, which needs Raw Umber, Vandyck Brown, and White; the grays are cool and the shadows are cooler than in darker coats.

The dark gray hound requires cold, metallic tints—Black, Cobalt, Raw Umber, with White and Naples Yellow in lights. The grays are bluish. The shadows may be warmed somewhat with Vandyck Brown.

It is always much easier to get local colour than it is to show its gradations as affected by light and shade. It must be remembered that local colour does not appear in high light or in deep shadow. All shadows must be kept as transparent as possible, and breadth of light and shade preserved as far as possible.

Texture depends as much upon the management of light and shade as upon handling. The smooth surface of a short, silky coat will show sudden transitions, whether of direct light, reflection or shade, much as a polished surface does. Long, curling hair needs warm shadow laid in first; then, a rather long, flat bristle brush must be made to throw on the tufts of hair as they are brought out by light. There must be no wiry lines imitating hairs; a large brush passing in the direction of the flow of the hair will faithfully represent its masses. It is as difficult to get these strokes as it is to make elegant flourishes with a pen; there must be no faltering nor patching—only confident, true aims.

With short coats, the colour is laid on without regard to the turn of the hair; this will give the effect desired at a proper distance, where more minute copying would be worse than lost—it would be feeble and ineffective.

The Eyes want transparent colour—Indian Yellow, Cobalt, and a little White for light eyes; Raw Sienna, deepened in shadow with Bitumen, for dark eyes; Naples Yellow and White, qualified with Black, will serve for all high lights. The iris of a dog's eye is not uniform in colour, but has two distinct sets of muscles, the inner set being sometimes almost as dark as the pupil. This peculiarity should be expressed only when the eyes are very plainly seen. It is usually sufficient to give the general effect of colour, light, and shadow.

The Mouth should have careful attention, especially if the bright, smooth jaws are open, exhibiting the teeth and tongue. The latter needs French Vermilion, Madder Lake, White, and Naples Yellow; with Brown Madder in shadow, and the essential gray rather light and pearl-like. But few of the teeth want pure white—only those that receive direct light; their shadows and half-tints call for Raw Umber, Black, and Neutral Tint.

III. COLOUR COMBINATIONS FOR VARIOUS ANIMALS.

Cats.—*White Cats.*—The White needs qualifying with Cobalt, Madder Lake, Naples Yellow, Yellow Ochre, Raw Umber, and Black, according to circumstances. Blue, Red, and Yellow also enter into the gray tints.

Yellowish Cats.—The same colours as named above are needed, with the addition of Vandyck Brown and Burnt Sienna. There should be less Madder Lake in the grays for these, as they are greenish.

For cold, brindled fur, add Black instead of Burnt Sienna, and keep the grays more blue, as for *Black Cats*, which require warm shadows, mostly Vandyck Brown and Brown Madder.

Maltese Cats.—Use Naples Yellow, Cobalt, Ivory Black, and Raw Umber; the gray tints are bluish and light.

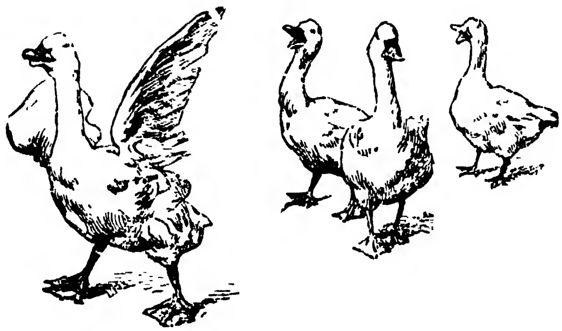
Tortoiseshell Cats.—The gray tints are greenish where the local colours incline to yellow, and purplish where they incline to brown.

Deer.—For the (brown) local colour use Raw Umber, Bone Brown, Burnt Sienna, and a little Ivory Black. For the white and gray parts White, Yellow Ochre, Madder Lake, and a little Ivory Black. The antlers are painted with Raw Umber, White, Bone Brown, and a little Permanent Blue, with the addition of Yellow Ochre and Burnt Sienna in the shadows. For the eyes use Bone Brown, Ivory Black, and Madder Lake, and paint the muzzle with Ivory Black and a little Madder Lake, adding Yellow Ochre in the high light.

Red Deer.—For the local tone use Light Red, Raw Umber, White, Yellow Ochre, and a little Ivory Black. In the shadows substitute Burnt Sienna for Light Red. For the highest lights, add a very little Permanent Blue to the White and omit the Raw Umber.

The Stag is the same in general effect, though perhaps somewhat stronger in colour, and has darker touches about hoofs, eyes, and ears. A little more Burnt Sienna is needed for the local tone.

The Doe and Fawn should be lighter and softer in effect, with more gray throughout. Use for these Light Red, Raw Umber, and Yellow Ochre, with White and a touch of Permanent Blue. In the deepest part of the shadows, Burnt Sienna and Black will give the necessary accent.



DECORATIVE PAINTING.

MURAL DECORATION.

TAPESTRY PAINTING.

I. INTRODUCTORY.

According to Hamerton, Tapestry Painting is the only instance of an imitation being, from the artistic standpoint, superior to the process imitated. Of course, nothing is more reasonable than that we should paint on canvas decorative as well as easel subjects, if we think fit to do so, and it by no means follows that, because to-day we adopt the decorative methods of old tapestry, our work need be imitative of it. Originally, the old textile method itself was in imitation of painting, and centuries ago painted tapestries were used for mural decoration.

The numerous uses to which painted tapestry canvas can be put include screens, curtains, *portières*, coverings for chairs and couches, and others that will readily suggest themselves. In Paris it has been applied to the decoration of important buildings, such as the Grand Opera House, and many of the churches, and in the United States painted tapestries have been used freely in State buildings, as well as in some of the finest private residences.

The best method of fastening the canvas to the wall is to have it stretched on light wooden frames. The decorations by this means can be removed at pleasure, and as the frames keep them from contact with the wall, there is no danger of injury from damp.

II. MATERIALS.

Tapestry painting is usually done with specially prepared liquid tapestry dyes, which are indelible after they are steamed. Oil colours are also used for painting on tapestry canvas, and answer fairly well. They are not, however, incorporated with the textile fabric, as the dyes are, and therefore are not so permanent. The dyes give more the appearance of woven tapestry, and they are well adapted to the reproduction of delicate water-colour effects. With oil colours you may get the exact effect of oil paintings, or of opaque water-colours.

The Canvas is prepared for the imitation of ancient and modern tapestry wall hangings and furniture coverings, and for *portières* and screen and other panels. It is made of wool or of silk, linen or cotton. That in wool or silk is the best for dye painting. The cotton should never be used with oil colours, as the paints " sink " badly unless the canvas is sized. Sizing, however, destroys the pliability of the fabric, and cannot, as a rule, be used to advantage, unless the painting is mounted upon a strainer.

The weave called " points Gobelins," in fine or coarse stitch, fine or ribbed, is adapted to all kinds of work. Other weaves are made in exact imitation of particular surfaces, such as ancient square-stitch Bayeux, or Aubusson (" hautelisse " and " basselisse ").

For tapestry painting which is to be " fixed " by steaming, all the tints must be mixed with a special medium that is sold with the colours.

Great care must be taken in choosing the material for a painting that is to be steamed. It should be so woven that it will sustain the scrubbing in of the colours, and of such a a texture that it will come out intact from the steaming process. But the result will repay any amount of trouble and expense ; for in no other way can the best technical effects with perfect pliability of the material be attained.

The Dyes are much like the corresponding colours in oil or water-colours, but the palette is much more limited.

The Medium is made of various gums, so combined that they will sustain the colour, while drying, in such a way that in steaming it sinks into the fibres of the canvas evenly and thoroughly.

The Brushes should be of the finest bristle. They are made without the flexibility of the ordinary brush, in order that they may scrub the colours into the coarsest weaves of canvas. Some are round, for scrubbing in flat tints; some chisel-shaped, for outlining, and others are cut slanting. The last-named are invaluable for carrying the colour up to the edge of an outline.

The Strainer must be so constructed that it will not warp under the repeated wettings of the canvas. A convenient one is made like the ordinary curtain-stretcher, or quilting-frame. It can be adjusted to fit any size canvas. A piece of canvas can be fitted to an ordinary strainer that may be too large, by tacking across the top and down one side with short, large-headed tacks, and lacing the bottom and other side by passing a stout cord through the canvas around the frame.

A cord that will not "slacken" when drying must be used, or else the canvas will be in wrinkles.

Tack the canvas so that the ribs are perfectly even; otherwise in steaming the drawing will be pulled out of line.

The Easel should stand so firmly that no amount of scrubbing in of the colours will cause it to wobble. A large canvas can be made to serve for an easel by fastening a hook at the top of the strainer and suspending it by a hook and cord from the ceiling or wall, letting the bottom rest on the floor. Many painters tack the canvas upon the wall, over a piece of sheeting or burlap.

A Steel Eraser should be provided, to scrape out the high lights.

The French dyes, which are considered the best, are sold in a liquid state, in bottles of two sizes, to suit the requirements of larger or smaller canvases. This is convenient, too, because much more of certain colours is needed than of others. The following thirteen dyes (with which we give the oil or water-colour equivalents) are all that are needed to produce any desired effect:—

TAPESTRY DYES.	OIL OR WATER COLOURS.
1. Ponceau,	Scarlet Vermilion with Crimson Lake.
2. Rose,	Rose Madder.
3. Cochineal,	Crimson Lake.
4. Sanguine,	Burnt Sienna.
5. Yellow	Indian Yellow.
6. Indigo,	Indigo.
7. Ultramarine Blue,	French Ultramarine.
8. Gray,	Neutral Tint.
9. Gray Green,	Raw Umber or Yellow Ochre and Cobalt (mixed).
10. Emerald Green,	Emerald Green and Cobalt (mixed).
11. Brown,	Vandyck Brown.
12. Violet,	Antwerp Blue and Crimson Lake (mixed).
13. Black,	Burnt Sienna, Indigo, and Crimson Lake.

To the above list we would add *Maroon*, as a valuable supplementary colour.

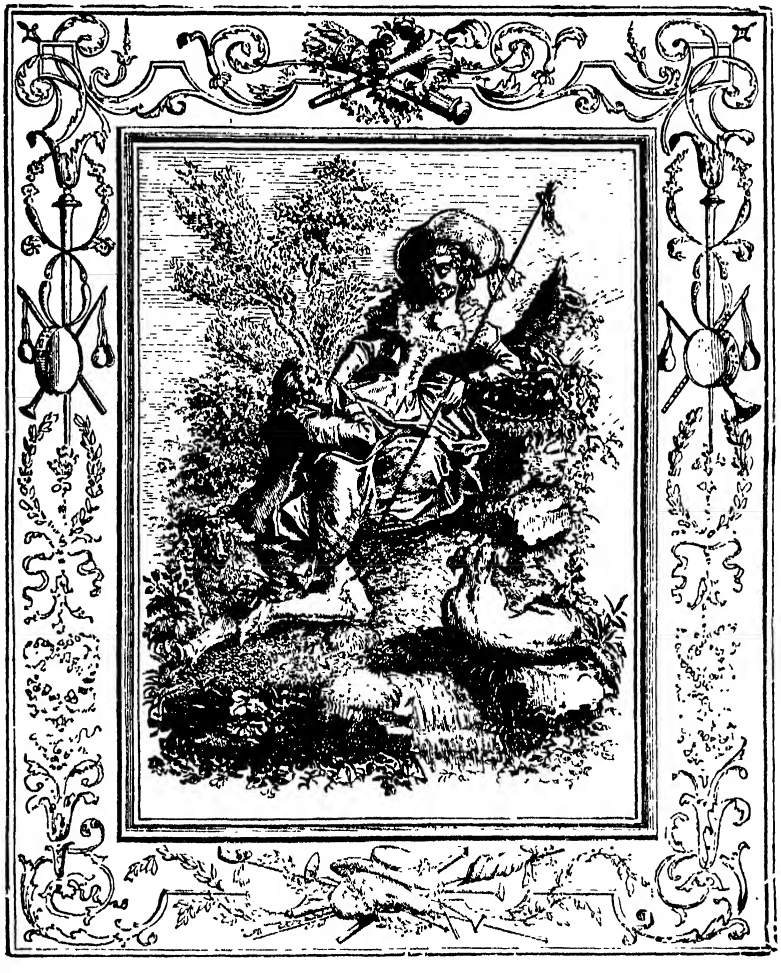
The most brilliant white is obtainable by simply leaving the canvas to do duty for the high lights, the shadows being put in with gray already prepared. The colours are combined with a special medium sold with them, and absolutely indispensable for genuine tapestry painting.

Ponceau is a brilliant red that answers somewhat to Vermilion in oil or water-colours. *Rose* is very similar to Rose Madder. Either of these dyes will serve for a delicate flush on the cheek in face painting—Ponceau is perhaps preferable. Ponceau likewise makes a good local flesh tint when mixed with a little yellow. For salmon pink in draperies the same mixture is admirable.

Cochineal produces a colour similar to a rich Crimson Lake, after steaming; when first applied it has a somewhat bluer tinge. It is remarkably permanent after it has been fixed, but it does not keep long in a liquid state, changing in a few months to a dingy brown.

Discoloured cochineal need not be thrown away; it makes a good Vandyck Brown if mixed with Sanguine and Indigo.

Cochineal, Brown, and Indigo form sediment at the bottom of the bottle, and need to be shaken every time they are used. This is so especially with Indigo, because the sediment contains the ingredient necessary for making the colour permanent; therefore, if the shaking be omitted a sky is likely to fade out in steaming, instead of coming up with added strength. The other colours do not produce a deposit; therefore it is not necessary to shake them before using them.



Design 30.—Textile Painting. Screen in Painted Tapestry, after Watteau.

Colours that form a sediment are liable to evaporate more quickly than others, Indigo and Cochineal especially; but they can be restored by adding a little warm water when they become thick or dry.

Ultramarine is a vivid, raw blue when used alone in any degree of strength; a very pale wash of it, however, gives a soft grayish blue in comparison with the turquoise shade yielded by a pale wash of Indigo. Ultramarine mixed with Ponceau and Sanguine gives beautiful heliotrope shades; without the addition of Sanguine, a violet tint.

Indigo and Ultramarine produce a good china blue.

Gray can be made by mixing Yellow, Indigo, Cochineal, and a very little Sanguine; but it saves much trouble to buy it ready prepared, using it as the foundation colour for shadows in white drapery. A slight glaze of any required colour can be worked over it for reflected lights taking colour from proximate objects.

The prepared gray is really invaluable also as a foundation colour for stonework and marble, other tints being run into it with ease wherever they are called for. In toning down tints that are too garish in themselves, it is also very useful.

Gray added to Ultramarine Blue gives electric blue, a colour very often seen in Gobelin tapestries.

Mixed with Yellow, Gray makes a beautiful pale yellow green, like that obtained by mixing Ivory Black and Lemon Yellow or Lemon Chrome in oil or water-colours. By increasing the proportion of gray a delightful neutral green is produced, most useful in foliage.

Gray Green forms a good standard tint for those who find a difficulty in mixing a satisfactory green, but unless frequently varied by the addition of Yellow, Blue, or Sanguine, it is apt to make the work monotonous.

Emerald Green is a very risky colour to handle; it should seldom, if ever, be brought into the composition of greens for foliage or landscape. It dries several shades deeper than it appears on the palette. Used pure, it makes brilliant emeralds. It is very useful if properly managed and kept sufficiently pale for iridescent effects on shells, in combination with other pure tints applied separately and allowed to blend on the canvas.

Brown, ready mixed, is very serviceable; the tone of it can be varied at pleasure by adding a little Ponceau, which makes a beautiful red brown, while the addition of Yellow makes an olive shade.

Brown can be made by mixing Indigo, Sanguine, and Yellow. Either a bright brown or a Vandyck Brown can be thus obtained, according to the amount of Indigo or Sanguine.

Violet is seldom used, except for jewels or as a local tint where very strong, bright colouring is needed; it requires the same caution in its application as does Emerald Green.

The following combinations of colours will be found very desirable:—

Indigo or Ultramarine with Yellow or Sanguine, Emerald Green with the yellows or with the blues, Indigo and Cochineal; Rose or Ponceau violet with Cochineal or Indigo.

Great care must be taken to prevent any crudeness in colour. If the reds are too strong, tone them with a wash of green, or if the yellows are out they can be modified by a violet or greenish tint.

III. LANDSCAPE.

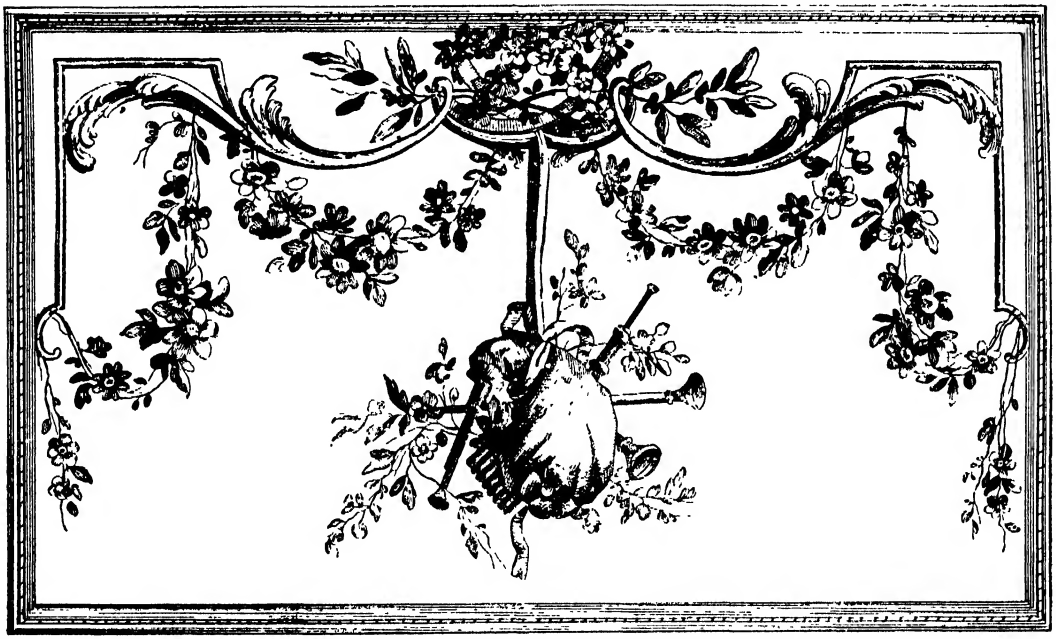
The choice of design should, of course, be duly considered with reference to the style, colour, and general tone of its surroundings, and to the ability of the painter. Figure subjects are generally preferred, but are sometimes dreaded by the amateur who is shaky in drawing. A great aid in such a case is the enlargement in outline of the whole design.

Transferring by "Pouncing" is a very simple process. The canvas is stretched, and the design is drawn in outline upon paper. Every line of the design is then pricked with a needle. Then the paper is fastened with its back to the face of the canvas, and the lines are gone over with a pouncing bag, which is made of coarse muslin filled with powdered charcoal. Do not pass twice over the same line, or you will blur it. On lifting the paper from the canvas, a complete duplicate of the outline will be found on the canvas. This must be secured at once by going over it with a finely pointed Conté Crayon, No. 2. The charcoal must then be dusted out by rapping the canvas at the back.

All this may seem like a very tedious process; but if the outlines are not drawn directly upon the canvas it is better to take even this trouble than have them defective. Each erasure of lines drawn upon the canvas injures its working quality.

Some artists, in painting skies in tapestry dyes, prefer wetting the whole space with medium and water, and then floating on the various tints. Others begin by painting in the tints directly upon a dry canvas. Others, again, paint in the light, flat tints first, and when these are dry, or nearly so, paint in the cloud forms and darker shades. Each method has its advantages, according to the kind of canvas and handling required for the sky effects.

For a sunset sky, with few clouds, mix with medium and one-fourth water three separate tints—(1) Ponceau, (2) Yellow, (3) Indigo. These can be light or dark, according to the tone of the picture, but in any case the dyes must be very much diluted.



Design 31.—Textile Painting. Eighteenth-century Panel, after Ranson.

Begin by painting with the Blue about one-third down the canvas. Into this blend the Ponceau, and follow with the Yellow. Blend the Yellow well up into the Ponceau, and down over the horizon line into the distance. Sometimes a tint of Yellow can be added just at the horizon. Use large brushes with plenty of colour, and scrub each tint in until every thread of the canvas is thoroughly soaked with the liquid. When dry, the various cloud forms can be worked in with stronger hues of the same colours, for which use Brown, and Sanguine for the darker touches.

A blue noonday sky can be painted with the same colours as the sunset sky, a stronger tint of Blue and lighter ones of Ponceau and Yellow being used. A little Ultramarine floated into the Indigo while the canvas is wet will serve to vary the hue.

A moonlight sky should first be painted with a flat tint of black, very much diluted with medium. When this wash is thoroughly dry, paint in with Indigo, well toned near the horizon with pure tints of Ponceau and Yellow. Clouds can be made as in a sunset sky, toning with black. The under-tint of black may often be extended over the whole canvas, and will give the required tone for a night scene. Keep the tint quite light at and near the horizon. A dark and stormy sky can be put in with the same wash, working up the effects with Indigo, Yellow, Ponceau, Cochineal, and Brown.

The Distance can be painted with violet grays of Indigo, with Ponceau and Yellow, with touches of Emerald Green and Brown, as may be required. Mix each tint with medium only. The shapes of objects can be indicated by touches of darker tints floated into the flat wash, small, sharp-edged brushes being used. If the effect is too distinct, or lacks atmosphere, it can often be remedied by scrubbing the tints well together with a large brush dipped into pure medium.

The Middle Distance is painted with the same colours as the distance, used much stronger, and not scrubbed in quite so thoroughly. Define the outlines of objects more distinctly, and vary the hues by blending in Emerald Green, Brown, and Maroon.

Water. Painting water is really a repetition of the sky treatment, except that the tones are stronger and the strokes of the brush markings horizontal instead of rounding, as they should be in the sky.

Rocks are painted first in broad, simple masses of light and shade, with black mixed with medium. The various tints characteristic of the kind of rock are floated in while the first wash is still damp. Various tints of yellow, violet browns, and sienna reds are made with Indigo and Emerald Green, Brown and Yellow, Brown and Violet, Emerald Green, and Ultramarine.

Such of these tints as are necessary to use should often be blended on the canvas, each colour by itself. A more solid effect is thus given than if the hues of the tints are mixed upon the palette.

When thoroughly dry the markings of ridge and cleavage can be put in with a ragged brush dipped in strong colour, mixed with pure medium. Make crisp, telling touches. No matter if they seem harsh, the steaming process will soften them. The aim is to keep the work strong and crisp-looking, not woolly or cloud-like.

Mix all washes with pure medium.

Foliage.—The process of painting foliage in tapestry dyes is similar in many respects to that used in water-colour painting. The palette, however, is more restricted, and the opportunities for display of technique much less meagre than either in water-colours or oil.

For the distance or middle distance of a picture, the foliage will work up best if it is in broad masses of light and shade. In the foreground, however, sprays of foliage in which the leaves and stems are decided in form and distinct in outline can be used with good effect, Large-leaved plants, broad bushes, or flowering branches of various shrubs are all very suitable. They are especially valuable for enhancing the atmospheric effect of the distance, and breaking up the monotony of sky spaces that otherwise would seem too flat. It is usually well to paint long sprays of foliage springing from the foreground across the distance and well up against the sky.

The leaves can be worked with minute details in the strong foreground colours, care being taken to blend well into gray tints on the edges, to prevent a hard look, as of inlaid work.

The following dyes will make good combinations and produce a sufficient variety of tints for general purposes: Indigo or Ultramarine, Yellow, Sanguine, Emerald Green, Cochineal, Brown, Gray Green, and Violet.

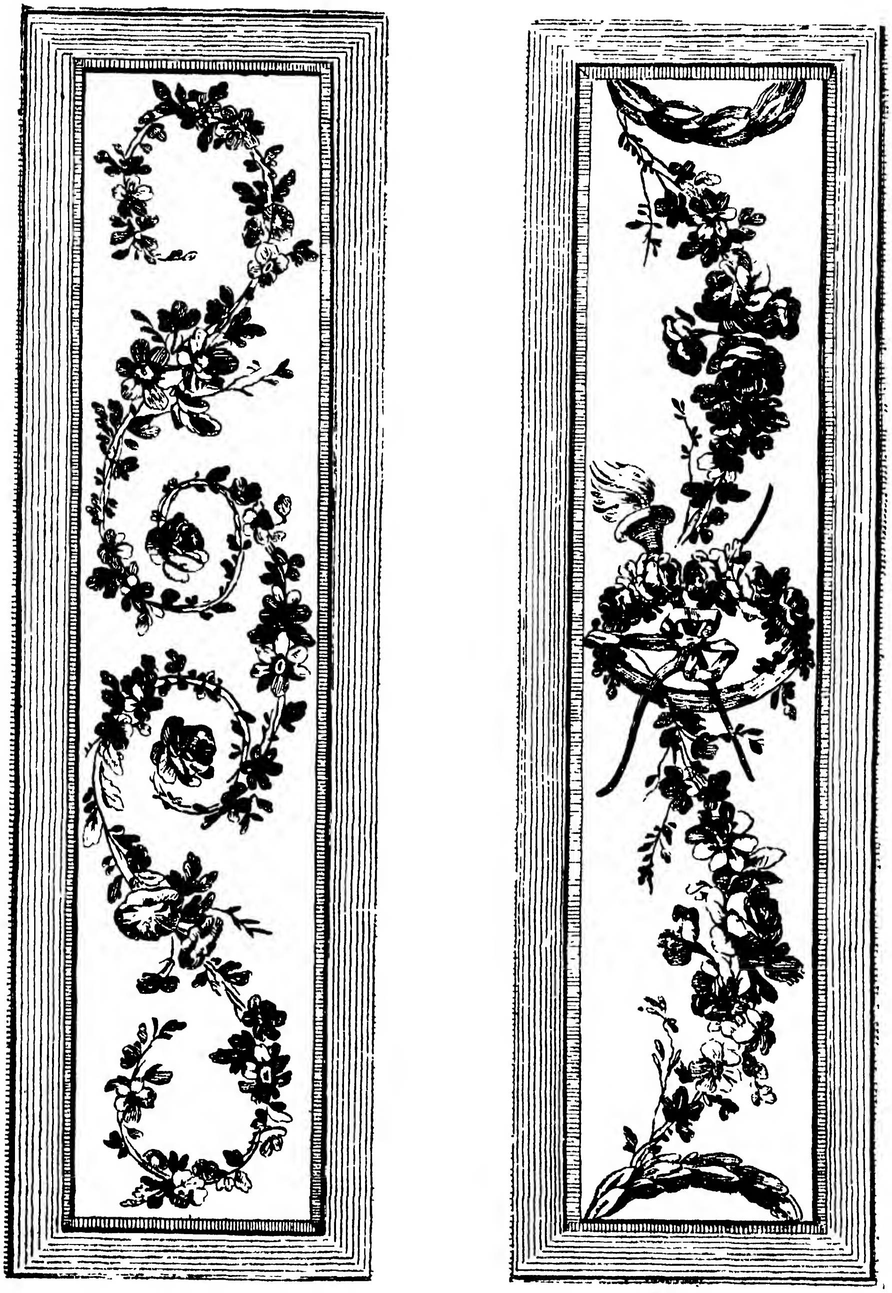
Mix the local tint with medium and water in equal parts, but use the pure medium for all shades and accents. In steaming, the effect will be much richer than if this rule is not followed. Use as large brushes as possible, to prevent a hard, dry appearance.

Yellow greens in strong contrast to blue greens and much of violet in the shades will tend to prevent the monotony of tint and flatness of effect too often seen in tapestry painting. In the distance a general greenish-gray tint combined with a bluish neutral tint is often very effective.

Foliage in the Distance can be painted by blending various tints of blue, red, yellow, and green. The tones should be much lighter than in any other part of the landscape, and of a purple or bluish violet hue.

The Middle Distance can repeat the tints of the distance, used stronger, with the introduction of a greater proportion of green.

Foreground Foliage can be painted with the



Designs 32, 33.—Textile Painting. Eighteenth-Century Borders, after Ranson.

above palette used in stronger tones. A good method is to use each colour in separate washes, blending each into the other while wet.

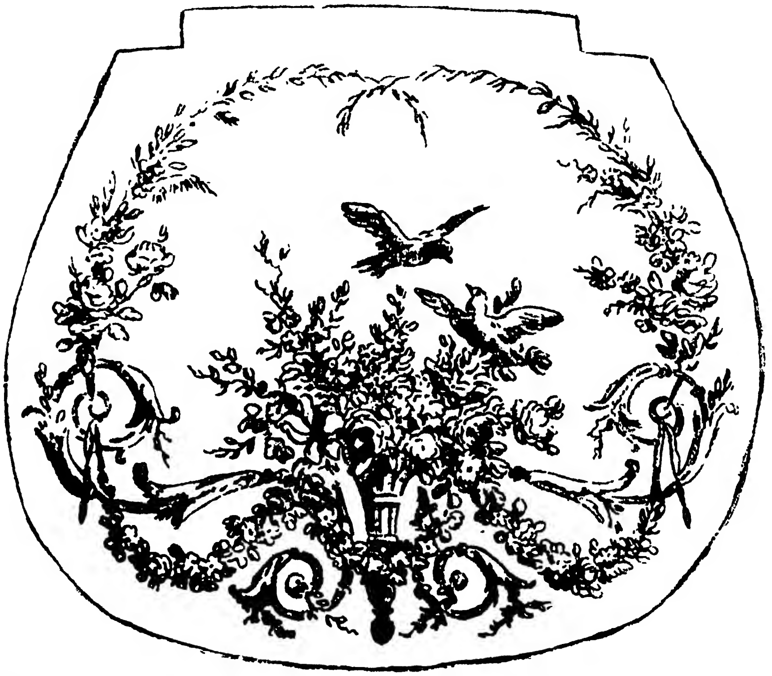
As a rule, it is not safe to mix more than three colours together in any one tint; otherwise the tints will be muddy.

Put the local tints in first, scrubbing them thoroughly in, to give a solid look to the whole foreground. While still wet, draw into these the detail of form of each object, with especial reference to the forms of shadows.

When partly dry the half-tints may be blended in and the accents carefully added. When all this is thoroughly dry, the outlines of objects and strongest accents can be drawn. Scrape out the highest lights with a steel eraser or knife. A fine atmospheric effect can often be given at this stage of the work by scraping off the paint with the eraser from the tops of the ridges or ribs of the canvas at various points in the distance and middle distance. Of course judgment must be used in doing this, so as to prevent anything of a harsh or wiry effect.

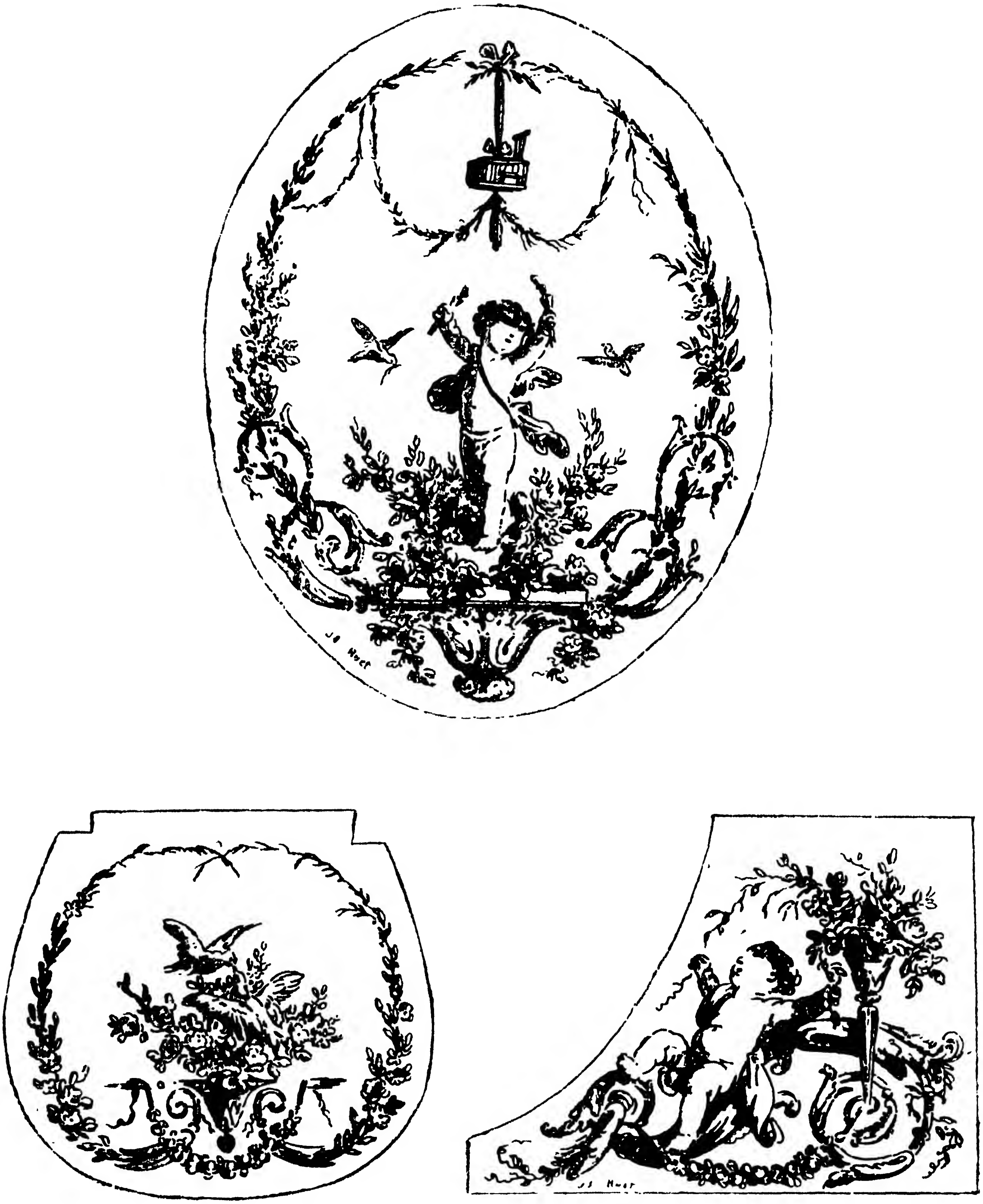
In the extreme foreground more detail can be worked in. All the various devices that may suggest themselves can be used to heighten effects.

Use broad, large brushes for all masses of colour, and sharp, chisel-shaped ones for details. As a rule, the local tints of all objects can be mixed with equal parts of water and medium, and pure medium must be used for shades and accents. This is to prevent any hardness of effect after the painting is finished by the steaming process.



Design 34.—Textile Painting. Tapestry Seat Decoration, by J. S. Huel.

Tree Trunks and Branches are very useful as aids to "effects" in tapestry painting. The gnarled gray trunk of an oak or beech tree, with its ragged edges and bits of mossy bark, is often invaluable in a broad, flat foreground. Paint in the local tints first, the outlines and half-tints next, finishing with the shades and accents. Scrape out the lights in sharp, crisp touches, and use the medium pure. A good local tint in case of a too yellow green foreground tint is Brown or Sanguine. The sienna hue serves to heighten the blues in the green,


J S Huet
J S Huet

DESIGNS 35, 36, 37.—TEXTILE PAINTING. TAPESTRY DECORATIONS, BY J. S. HUET.

thus bringing them into tone by force of its complementary tint.

Flowers are much used in painting on tapestry canvas, because of their extremely decorative effect. Those with large, loose petals are the best, and are really the only ones suitable for such work.

White Flowers may often be modelled by indicating the shadows and half-tints with a gray tint of Black or Gray toned with Emerald Green or Rose or any other colour that may be needed to make the tint tone with the rest of the picture. The bare canvas is left for the high lights. Sometimes a wash of pure medium is put over it, and when it is dry the highest lights are scraped off. This, when the work is steamed, serves to tone the lights. A good effect, in case of a yellowish canvas, is to add a touch of Rose to the medium in all but the accents of light.

Rose-coloured Flowers.—Use Rose or Cochineal shaded with Emerald Green, toned with violet or gray.

Blue, Purple or Violet-coloured flowers can be painted with Rose or Cochineal, with Indigo or Ultramarine. Shade with Gray Green and Brown. The local tints of blue flowers can be made with Indigo or Ultramarine shaded with Cochineal and Gray Green.

Yellow flowers may be painted with the Yellow for the local tint and shaded with Sanguine or Gray Green toned with Violet or Cochineal.

In very delicate tones in all flowers the bare canvas can be left for the high lights, and the local tints can be made to serve as shades, toning them with gray. The foliage may be painted with the same palette as that given for leaves in the foreground.

Keep the half-tones well *en évidence* in both flowers and foliage, and preserve broad effects of light and shade. The sparkling high lights on the petals can be made by scraping off the paint from the ridges of the canvas with an eraser. Scrub the local tints well into the canvas and mix the colours with pure medium. Use as large brushes as possible.

IV. FIGURES.

Figure Painting is more easily done in painting on tapestry canvas than on any other material. A successful result is best obtained by a broad, simple treatment. With this in view, it will at once be seen that a correct outline of all forms is absolutely necessary.

The drawing having been accomplished, the flesh is painted as follows: Mix a strong tint of Ponceau and Sanguine with pure medium. Paint with this all the shades in the flesh, keeping exactly within the outlines. Preserve the reflected lights, as they are of great value in giving the effect of modelling to the features.

When the canvas is thoroughly dry, put in the flesh tint with Sanguine for brunettes, and Ponceau for blondes. Mix with pure medium.

Put on a very light wash first, and into this blend a darker one wherever a half-tint or shadow falls.

When partly dry, blend into the flesh wash the carnation tints. These are made of Ponceau and medium, and must first be washed in in a faint tone, what colour may be needed being added to give the required strength in a second or third wash. A touch of Rose may be added for a brunette. The colour of the cheeks should not run too high up, but should form a triangle between the ear and nose. Give a touch on the tip of the ear, the end of the chin, on the forehead and over the eyes. The upper lip may be drawn with Maroon or Cochineal, with the least touch of Brown or of Black. The lower lip is put in with pure Ponceau shaded with Maroon or Cochineal and darker tones of the Ponceau. Tone it with Green.

The shadows of the flesh will now look too hot and harsh. They can be toned into a warm neutral gray with a wash of Indigo and Yellow, mixed to a bright green with pure medium.

When partly dry, the warm accents of shade can be redrawn with Ponceau and Sanguine. This part of the work must be carefully managed in order to keep the whole painting in good tone. If the shadows look too green, wash over them a light tint of Ponceau or Maroon or Cochineal. If too red, use more of the green.

When all this is thoroughly dry the half-tints may be washed in. For brunettes use Indigo, Ponceau, and Yellow, mixed to a greenish hue. For blondes use the same colours, mixed to a violet hue by using less yellow.

Scrape out the high lights with a sharp eraser, leaving the flesh untouched in the half-lights. Blend these into the shades with the half-tint wash. This must be done accurately, so as to retain the roundness of the features and the values of both light and colour.

When thoroughly dry, the spots that may seem too dark can be scraped down with a sharp eraser. A good effect is often obtained by painting in the half-tints darker than is natural, and when thoroughly dry scraping the paint off the tops of the ridges of the canvas. The colour should be mixed with pure medium, which, in steaming, will blend the tints, giving a stippled effect. The local tints of the eyes, hair, drapery, and background should be washed in after the first light flesh wash is put in, in order to bring the whole picture into tone. Wash the shape of the shades in first, the local tint next, and the half-tones and accents last.

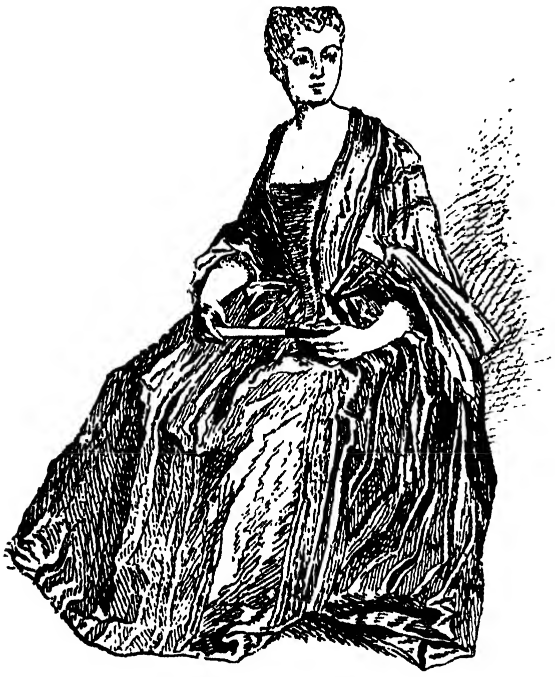


FIG. 134.—TEXTILE PAINTING. DECORATIVE FIGURE, AFTER WATTEAU.

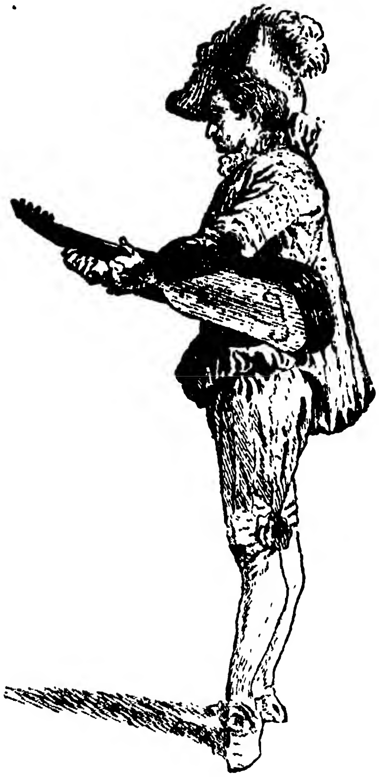


FIG. 135.—TEXTILE PAINTING. DECORATIVE FIGURE, AFTER WATTEAU.

The Eyes.—The local tints of blue or gray eyes can be made with Indigo toned to the right hue with Ponceau. Shade with Sanguine and Black or Brown.

For brown eyes use for the local tint Sanguine; shade with Brown and Violet or Black. The ball of the eye is shaded with Black with a touch of Violet. The expression of the eye depends very much upon the lines and shades around the eye. Every detail must therefore be rendered carefully. The chief points are the inner angle of the eyeball, the shadow of the ball under the eye, and the lines of the lids. Use a warm tint for all the accents above the eye, and cool tints on the eyeball and under lid.

Scrape out the highest lights with a sharp knife.

Soften the lines of the eyebrows into the flesh with the cool half-tints, blending them so that no actual lines can be seen. The dark accents of the eyebrow will help greatly to bring out the desired expression of the eye. Scrape out the high lights with the eraser.

The Hair.—The local tints of the hair should be put in with a faint wash, followed by stronger tones in the half-lights and shades. The reflected lights help to give roundness to curls and braids. Keep the lights sharp in very glossy hair. Use as large brushes as possible, and mix the colours with pure medium.

Golden hair can be painted in with yellow toned with Maroon, Cochineal, or Brown to the desired hue. Sometimes a touch of Sanguine is good. Shade with Maroon and Brown or the shades of the flesh tints. The half-tints can be put in with faint washes of Violet and Emerald Green.

The local tint of brown hair can be the Brown shaded with Black or Violet.

Black hair is painted with a local tint of Indigo and Maroon or Cochineal shaded with Violet or Black.

Drapery is most effective in tapestry painting when painted in a broad and simple style. For satins the lights and shades are sharp, while the half-tones are in broad masses. In silk the lights are broader, and in velvet broad and flowing. This should be kept well in mind, as it is difficult to alter the work after it is once painted. The reflected lights in all draperies are of great value in indicating texture and to give roundness.

Yellow Drapery.—Use a local tint of the Yellow, put on in faint washes. Into this blend stronger tones of the same colour toned with Cochineal, Maroon, Brown, or Violet, as may be needed to give the desired hue. Follow with shadows of Brown. The half-tints can generally be reached by faint washes of Violet or Emerald Green. Thin washes of pure Ponceau often will tone up the shadows, if too cold or flat.

Blue Drapery.— Use Ultramarine or Indigo, according to the desired hue. A touch of Emerald Green serves to vary the tint. Any one of these colours may be shaded with either of the other two for a general shadow tint. The accents of shade can be put in with Violet, or Ponceau and Black. Thin washes of Rose will often serve to tone the shadows, and vary the broken tints of silk or satin.

Green drapery may be shaded with Violet and Black. The local tint can be Emerald or either one of the blues toned with Yellow.

Brown drapery is washed in with a local tint of Brown shaded with Black, Maroon, Cochineal, or Violet.

The local tints for all the above draperies should be scrubbed into the canvas until every thread is thoroughly soaked. This will give a solid, even wash, which will aid greatly in giving the required textures. Use the medium pure in all washes, and paint with as large brushes as possible.

Backgrounds other than landscape can be washed in with pure tints, blended one into the other on the canvas. Avoid a dark, flat background, as it will look too heavy on tapestry canvas, but blend various tints until a gray of the required hue is found.

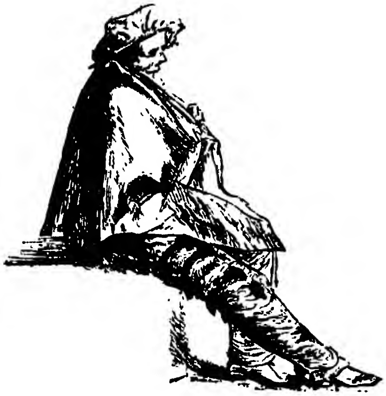
As a general rule the strength of the background should be between the shadows and half-tints of the figures.

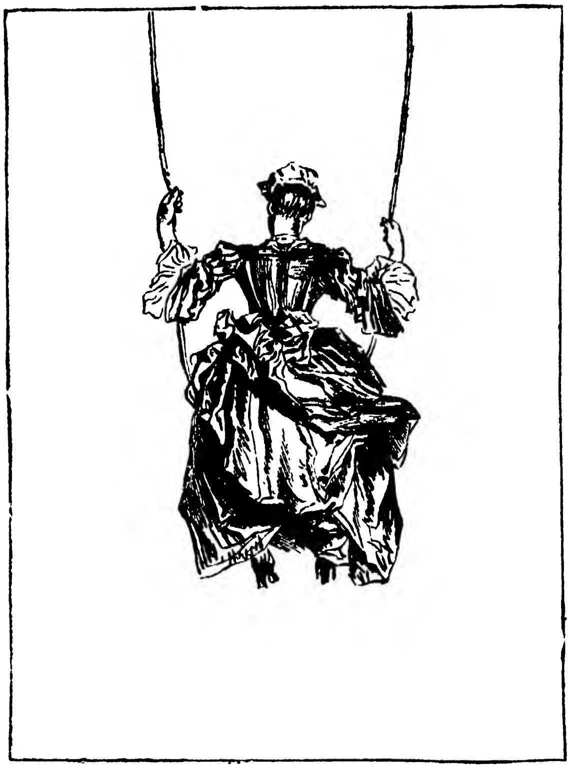
A bluish-gray clouded ground is made of Indigo with thin washes of Ponceau and Yellow blended into it.

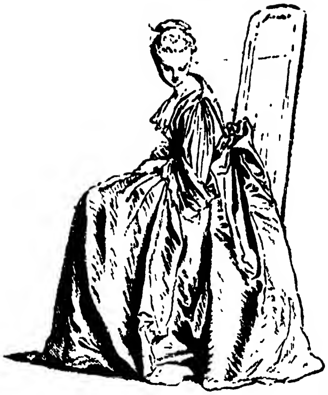
As a rule, light backgrounds are more satisfactory in painting on tapestry canvas than are the dark, opaque backgrounds often used in oil.

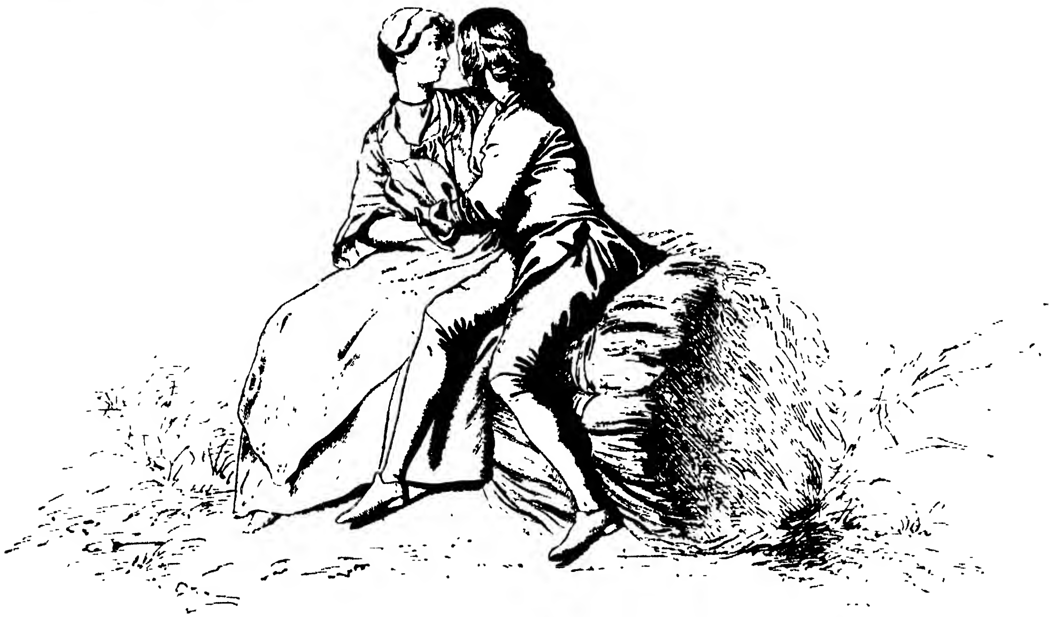
When the general effect has been gained in the picture it is ready for the finishing touches.

All points should be well criticised to see that they are in proper tone, and the effect of









FIGS. 136-139.—TEXTILE PAINTING. DECORATIVE FIGURES, AFTER WATTEAU.

each detail is in accord with its surroundings. Perhaps the flesh tints seem too red. They can be toned with the half-tint given for flesh painting. Be careful not to get a muddy look. If too dark they can be scraped down with the eraser. Leave all the reflected lights of the flesh, as a rule, quite warm in tone. The high lights can be scraped out, but must be kept in correct values.

Tones of colour that seem too crude can be modified by washes of a complementary colour. Study the whole painting at a distance, so as to ascertain whether or not the harmony is complete in all respects. A good time to choose for this test is just when the light is fading into twilight.

Enlarged to the full working size (33 in. x 27 in.) Mr. Haité's group of cupids (Design No. 45) will be very effective.

The painting may be done either on silk or wool canvas. In either case, it will be best not to put in any colour for the background; the soft, creamy tint of the wool or the écru shade of the silk will serve better than anything else. Mix a dark, warm tone for outlining the features and figures, with Sanguine, Yellow, and Indigo Blue. When this is dry, put in a flat wash composed of a mere suspicion of Sanguine mixed with plenty of medium and a little water. While still wet, touch some Ponceau or Rose into the cheeks, and pass a delicate shadow colour over those parts that recede and on the lower edges of the limbs. Make a shadow colour by mixing first a bright pale green with Yellow and Indigo, adding to it a very little Sanguine. Paint the hair with light Yellow, with a drop of Ponceau added for the local wash. Add a very little Brown for the dark markings. A touch of prismatic colouring will greatly add to the effect of the wings, which should be afterward outlined with Gray.

The star must be very lightly put in with Yellow; for the outlines and rays add Brown to the Yellow. The blossoms are pink: paint them with a little Ponceau over the Yellow.

If painting on écru silk, try the colours on a spare piece, and allow them to dry, before painting with them on the design; because the tints, when wet, on silk look so different that they are apt to be deceptive until one is accustomed to make allowance for their appearance when dry.

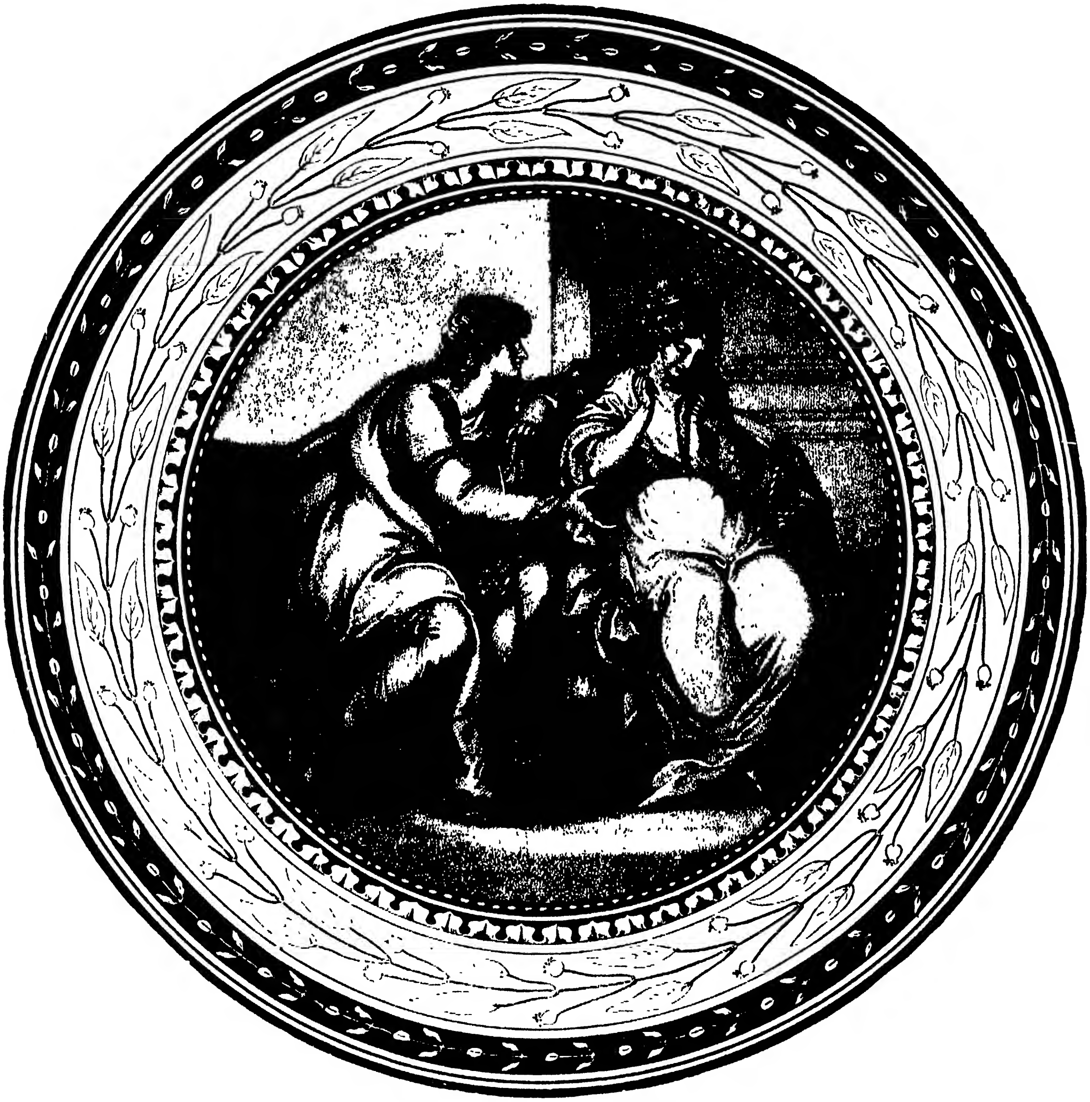
The Angelica Kauffman medallions (designs Nos. 38 and 39) would serve well for wall hangings in tapestry painting, if sufficiently enlarged. Use wool canvas. For the musical subject, the woman's robe may be of a soft azure blue, obtained by mixing a little Emerald Green with Ultramarine, and introducing into the half-tones and shadows some complementary colour made with Yellow and Sanguine. For the man's robe make a red brown with Sanguine, Indigo, and Ponceau or Vermilion.

For the other design, the woman's dress may be white and the cloak buff-colour. For shading the white dress, make a gray with Cochineal, Indigo, and Yellow; leave the canvas untouched for the high lights. To produce a buff-colour, make the shadows of Yellow, Sanguine, and Indigo, and the light wash of Yellow much diluted, with just a touch of Ponceau in it. Let the man's robe be purple. A beautiful tint can be made with Cochineal and Ultramarine. Introduce some Yellow into the shadows and a little Sanguine. The hair of the woman in each case may be golden and that of the man brown.

The border may be simplified by omitting the two inner ornamental members and replacing them by a dark red line. For the ground of the broad band, wash in a blue gray. Make this with Ultramarine, Ponceau, and Yellow. The tint must be light; put it in as flat as possible over the whole band, and afterward paint the design in gold, shaded to brown with Yellow, Sanguine, and Indigo; for the outer band use a rich red; make the design on it gold-colour.

V. STEAMING.

The process for rendering the painting indelible is so simple that any one may undertake it. All the outfit necessary is a zinc cylinder fitting into a boiler of the same material and a small atmospheric gas stove. The most useful size is that which is high enough to take the fifty-four-inch canvas. At least six inches extra should be allowed. The lower part, which forms the boiler and stands on the gas stove, should be about twelve inches in diameter and at least ten inches deep. The upper part fits into it easily, so that a thin cloth may be placed between the boiler and the cylinder. This forms a kind of wedge. The parts of the cloth remaining outside must be rolled up and drawn tightly over the division to prevent any steam escaping. The section at the side of the cylinder, in the illustration,



DESIGN 38.—TEXTILE PAINTING. DECORATIVE MEDALLION, AFTER ANGELICA KAUFFMAN.

Suggestions for Treatment.—The woman's dress may be white and the cloak buff. For shading the former use a gray made with Cochineal, Indigo, and Yellow; leave the canvas untouched for the high lights. The buff may be made with a light wash of Yellow, with a touch of Ponceau in it, the shadows being of Yellow, Sanguine, and Indigo. The man's robe may be purple, made with Cochineal and Ultramarine.

shows the top view with a crossed bar of wood resting on it, notched underneath to keep it in position. The notches visible outside the bars are made for the purpose of fixing the tapestry in position. A cylinder of the size described will take a tapestry three or four yards long by fifty-four inches wide. If it is proposed to steam two or three of smaller sizes, they must be sewn together before being rolled up. When rolling the tapestry, be careful to allow a small space between each turn, so that the steam may circulate freely. Take a packing needle with some strong string and pass it through the canvas on either side of the roll; then tie the string tightly round the notches on the bars. The roll can be secured on four sides if very heavy; but, as a rule, two fastenings are sufficient. The boiler, rather more than half full of water, having been placed on the stove and the cylinder properly fitted into it, next drop the roll of canvas into position, having taken care to secure the lower corner so that it cannot flap against the side. Be very particular that the roll hangs straight; for if it touches anywhere it will most likely be spoiled, as the steam will doubtless condense a little on the inside of the cylinder itself, from the action of the air outside. Remember that condensed steam turns into water, and if the tapestry becomes *wet* while being steamed, it will be spoiled, for the colours will run together. It is a good plan to put an old woollen shawl or a small blanket right over the top and around the outside of the cylinder. The steam will be kept in by this means, and yet enough can filter through the covering to avoid any chance of the cylinder bursting. Do not put any other kind of cover on the top of the cylinder; it is not required, and would be dangerous.

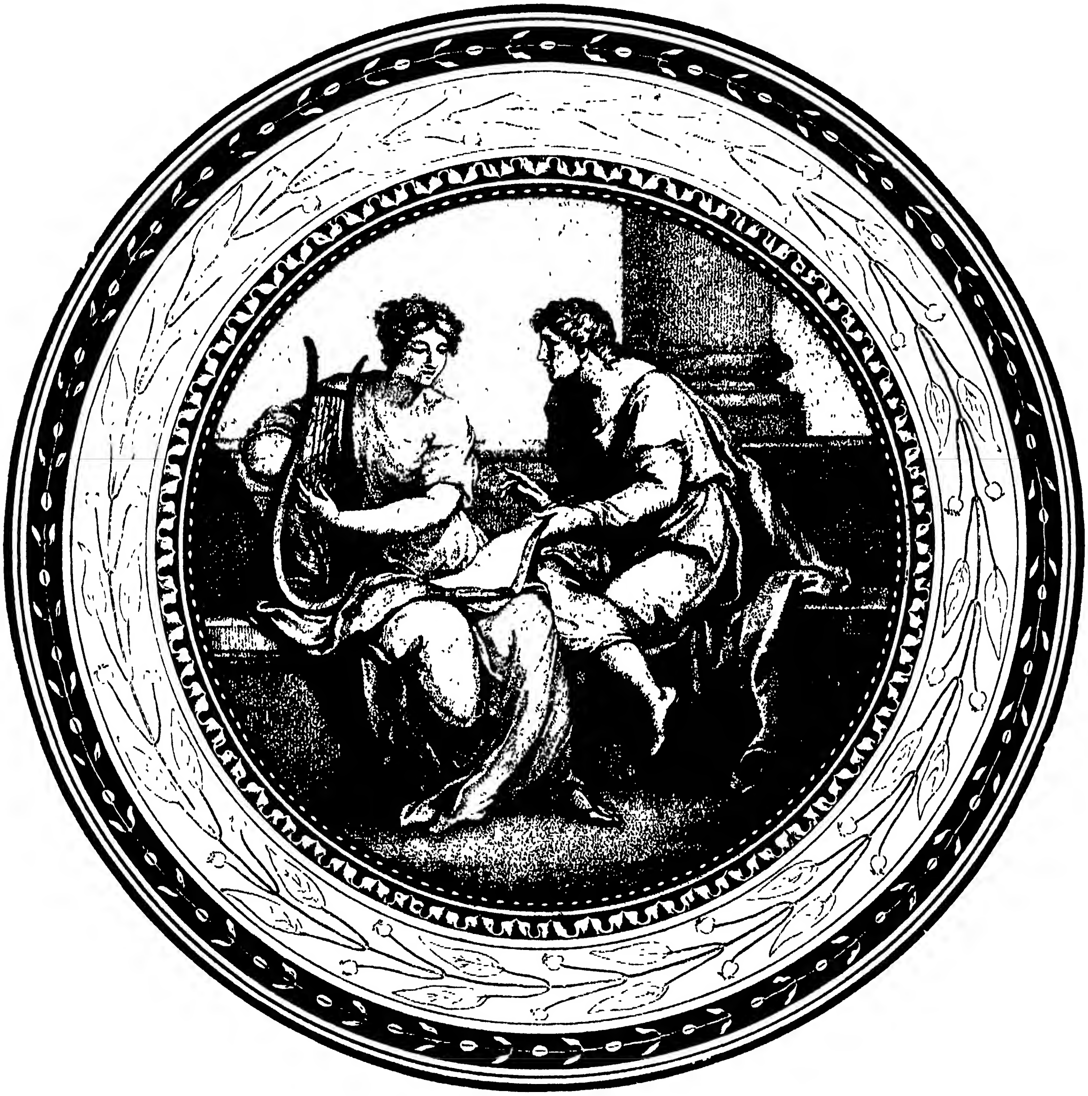
All things being in readiness, light the gas. The water will boil in about twenty minutes, and soon after you will see the steam coming through the top. From the time you see the steam rise, allow about one hour and a quarter; a few minutes more or less make no difference. Before taking out the tapestry, put on a thick pair of gloves, or you will scald your hands. Uncover the top as expeditiously as possible. Grasp the cross-bar of wood firmly in the middle and snatch the roll of tapestry out of the cylinder without loss of time. It is a wise precaution to have some one at hand to turn out the gas for you, just at the last moment, or in the hurry of attending to the business in hand, you may drop the covering so that it catches fire. Cut the fastenings and unroll the canvas; then, if all has gone well, you will be delighted at the results of the steaming process. If the colours have been judiciously combined in the work, an indescribable velvety softness will have been imparted to the whole painting and a certain mellowness such as comes from age, which is not without value in decorative work of this kind.

IX. PAINTING ON SILK TAPESTRY CANVAS.

The proper silk tapestry canvas is a delightful material, very solidly woven, with a rib exactly similar to that of the fine wool canvas. There is a silk somewhat resembling it in texture, much used for fancy-work, such as sofa pillows or small screens. This costs only about half the price; but as the quality is very inferior, for chairs, sofas or curtains it would be poor economy to substitute it for the better fabric.

For flesh painting on the écru silk, it is best to take a light wash of Ponceau for the local tint, instead of Sanguine, which gives rather too brown a hue. Upon white or cream colour the Sanguine should be very much diluted, as already pointed out. For painting on silk, it is best to put in the local flesh colour before the shadows; when this tint is almost dry the latter should be blended in quite broadly and with as little detail as possible. Mix shadow colour on the palette with Indigo, Yellow, and Sanguine, much diluted. A very strong mixture of the same colours with a little pure medium is needed for outlining; a conventional outline is indispensable to this kind of work.

Secure the drawing first by means of the outline, and allow it to dry thoroughly before proceeding further.



Design 39.—Textile Painting. Decorative Medallion, after Angelica Kauffman.

Suggestions for Treatment.—This and the companion design, sufficiently enlarged, would be effective in painted tapestry as wall hangings. An oblong arrangement would be most generally useful for this purpose, and the borders, naturally, would have to be omitted. More space above the heads would be required than for the present circular composition. The woman's robe may be of soft, azure blue, made by mixing a little Emerald Green with Ultramarine, introducing into the half-tones and shadows some complementary colour made with Yellow and Sanguine. The man's robe may be red-brown, made with Sanguine, Indigo, and Ponceau.

When applying the local wash, be careful not to make it too wet. No scrubbing is required; the silk absorbs the colour at once. Work up barely to the outline, beginning at some distance from it every time you replenish your brush; this is to avoid the risk of the outline running into the local colour, which it certainly will do if the wash is too wet and allowed to spread freely into the outlines. Add a very small proportion of medium for the washes; the knife cannot be used with any appreciable effect upon silk, therefore a very little medium will suffice. It is better to paint with brushes somewhat softer than those necessary for scrubbing the colour into wool canvas.

One difficulty in painting upon silk, which nothing but experience overcomes, is that the colours when wet look totally different, especially upon the écru silk, from their appearance when dry. Until you have learned to rely on your judgment for the finished effect in selecting your colouring, it is desirable to keep a piece of silk for testing each colour before venturing to fill in the design. As the colour dries very slowly on silk, be sure that the test colour is really dry before deciding.

In pouncing on the design, great care must be taken not to smear the pounce powder upon the silk, because it cannot be beaten out as it can from woollen canvas; for this reason also it is necessary to outline the whole of the design in colour before putting in any washes. It will be found that in outlining with the moist colour it will entirely absorb the pounce powder. The frame on which the silk is stretched should be laid flat for pouncing, instead of being kept upright, as has been recommended for wool canvas. This will prevent the powder going through quite so freely, or settling on the silk in parts that are not covered by the design.

The Steaming Process is not to be recommended for fixing paintings on silk tapestries. Indeed, it detracts from, rather than adds to, the beauty of the colouring. This is especially so when écru silk is used; and this tint is preferable for chairs and sofas, not only because it is a beautiful and durable background colour, and one not easily soiled—white or cream silk soon shows marks of wear—but also because it subdues all the colours painted into it, thus obviating crudeness and giving softness and depth.

Without steaming, the dyes will be fairly permanent for several years.

VI. PAINTING WITH OIL COLOURS.

Although a painting in oil colours on tapestry canvas cannot be made indelible like the one done with the specially prepared dyes and afterwards steamed, it may at least be as permanent as any ordinary oil painting, and therefore it should be good enough for most practical purposes. The special advantage it possesses is that the artist who is accustomed to paint in oil colours has not to learn a new process in order to turn his attention to large decorative work, if he feels inclined to take it up.

The Canvas.—There are various kinds of canvas, which vary in quality and price. The weave selected has much to do with the appearance of the painting. The rib and cross-stitch weaves are most used.

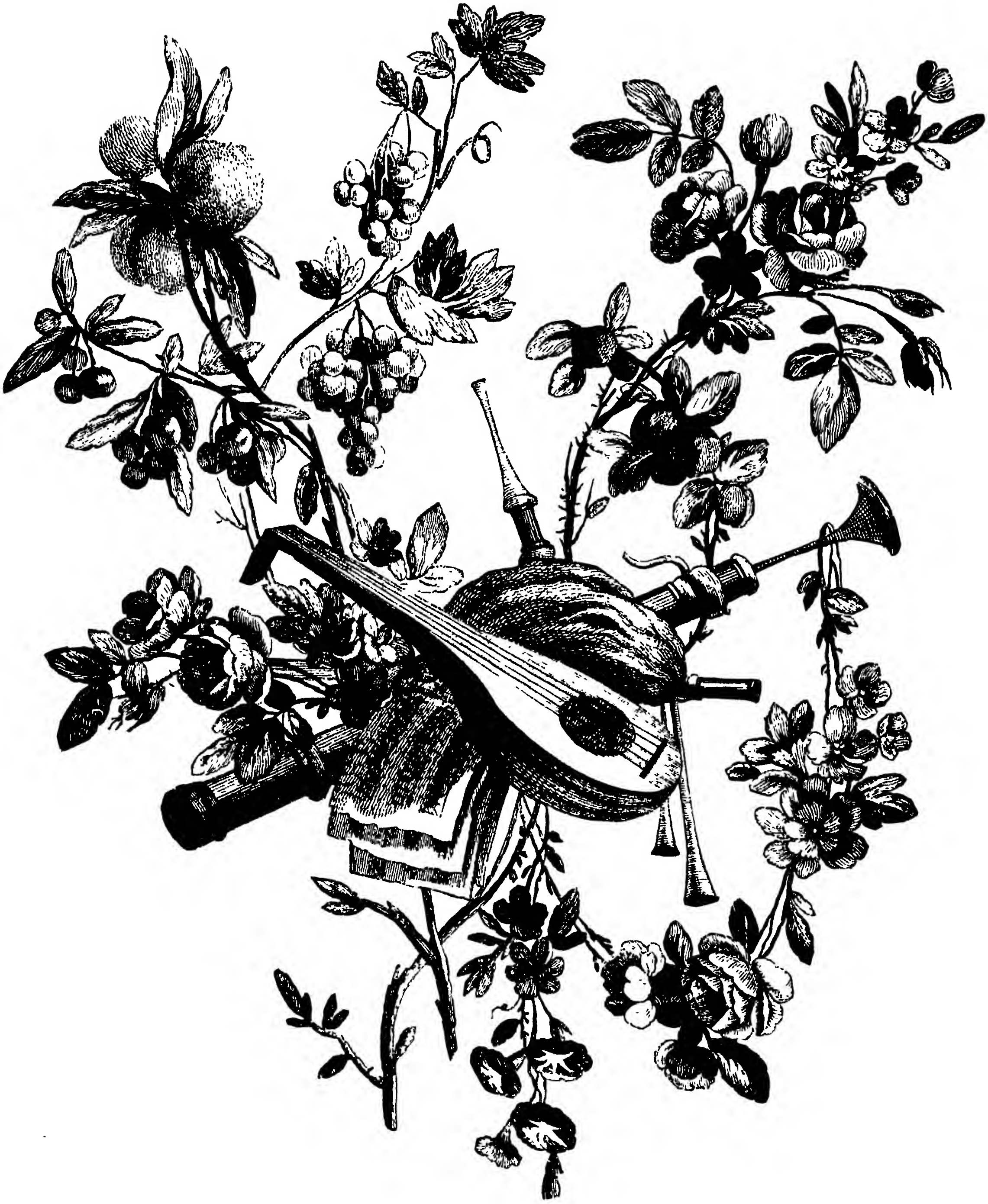
The "rib" canvas is woven in either coarse or fine reps running horizontally from selvage to selvage. In some these are as large as in corduroy, in others as fine as gros-grain silk. The medium coarse-ribbed canvas is perhaps the best for large panels to be hung in rooms of ordinary size. It resembles Gobelins.

The "cross-stitch" canvas is not as easy to paint upon as the ribbed, and with it one often gets only the effect of the coarse Roman canvas used in easel painting.

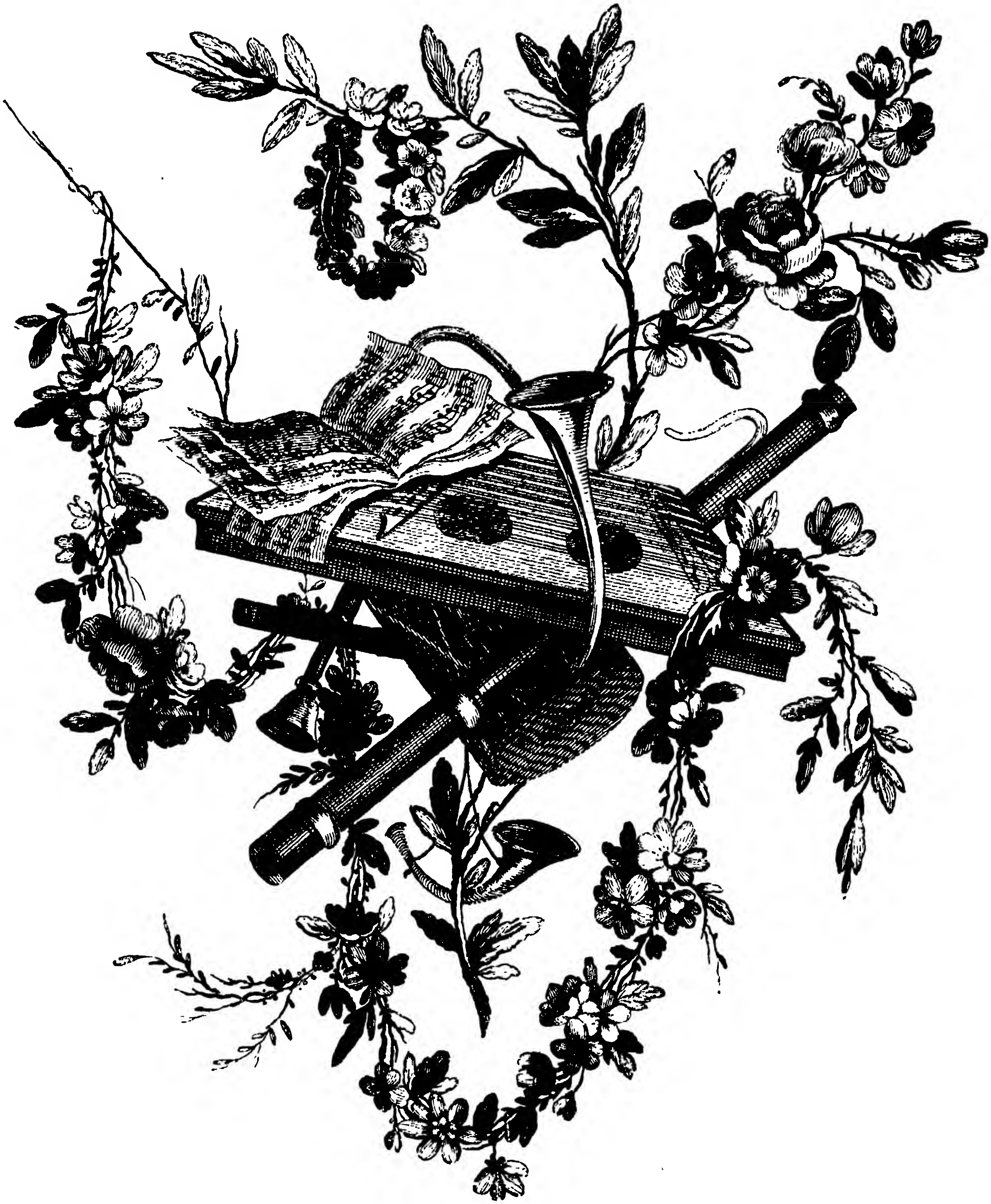
The Brushes may be ordinary bristle. Sable or camel hair will not answer.

The extra stiff brushes used in dye-painting are also very useful in some portions of the work.

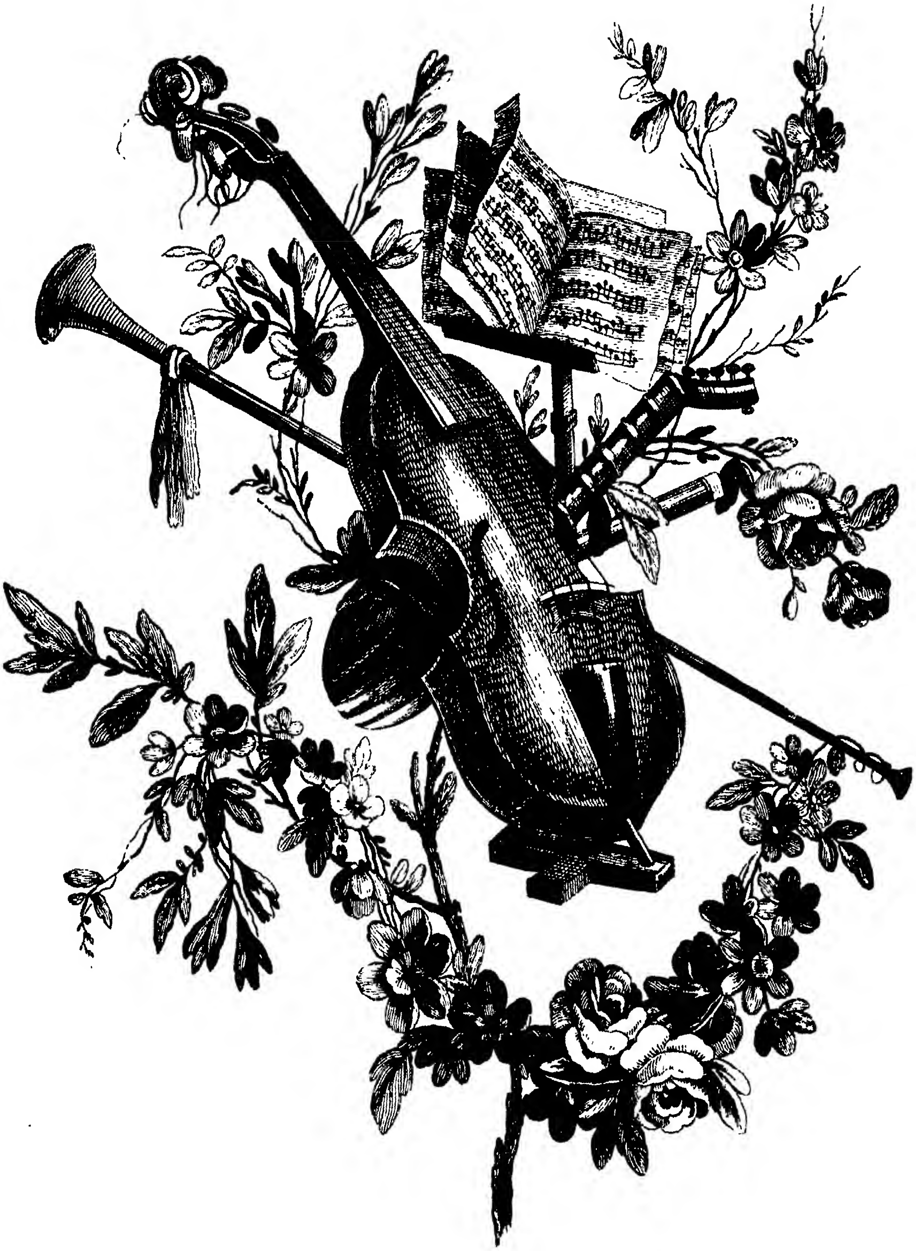
Mediums.—The choice of various mediums is open to the decorator. He may mix his paints with turpentine, gasoline, naphtha, or even kerosene. Naphtha is most suitable. Turpentine is too sticky, gasoline too heavy, and kerosene may injure the paints. *On no account must any kind of oil be used.* On rib canvas the painting is best done without medium of any kind. Indeed, except on wool canvas, this is a good plan to follow generally. Apply the colours in thin coats, just as they come from the tube. They must, however, be free from any excess of oil. This can be



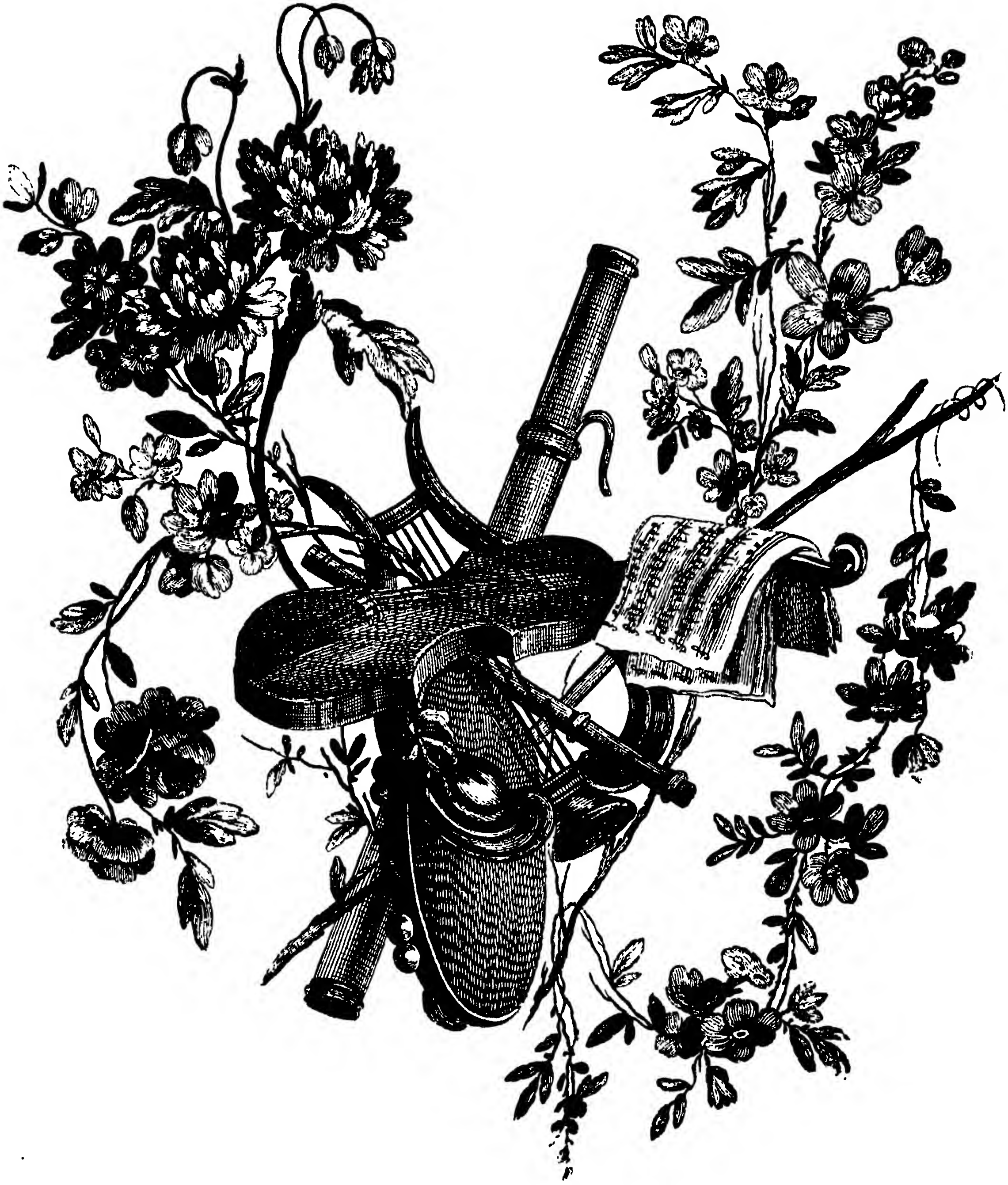
Design 40.—Textile Painting. Decoration in Louis Seize Style, after Ranson.



DESIGN 41.—TEXTILE PAINTING. DECORATION IN LOUIS SEIZE STYLE, AFTER RANSON.

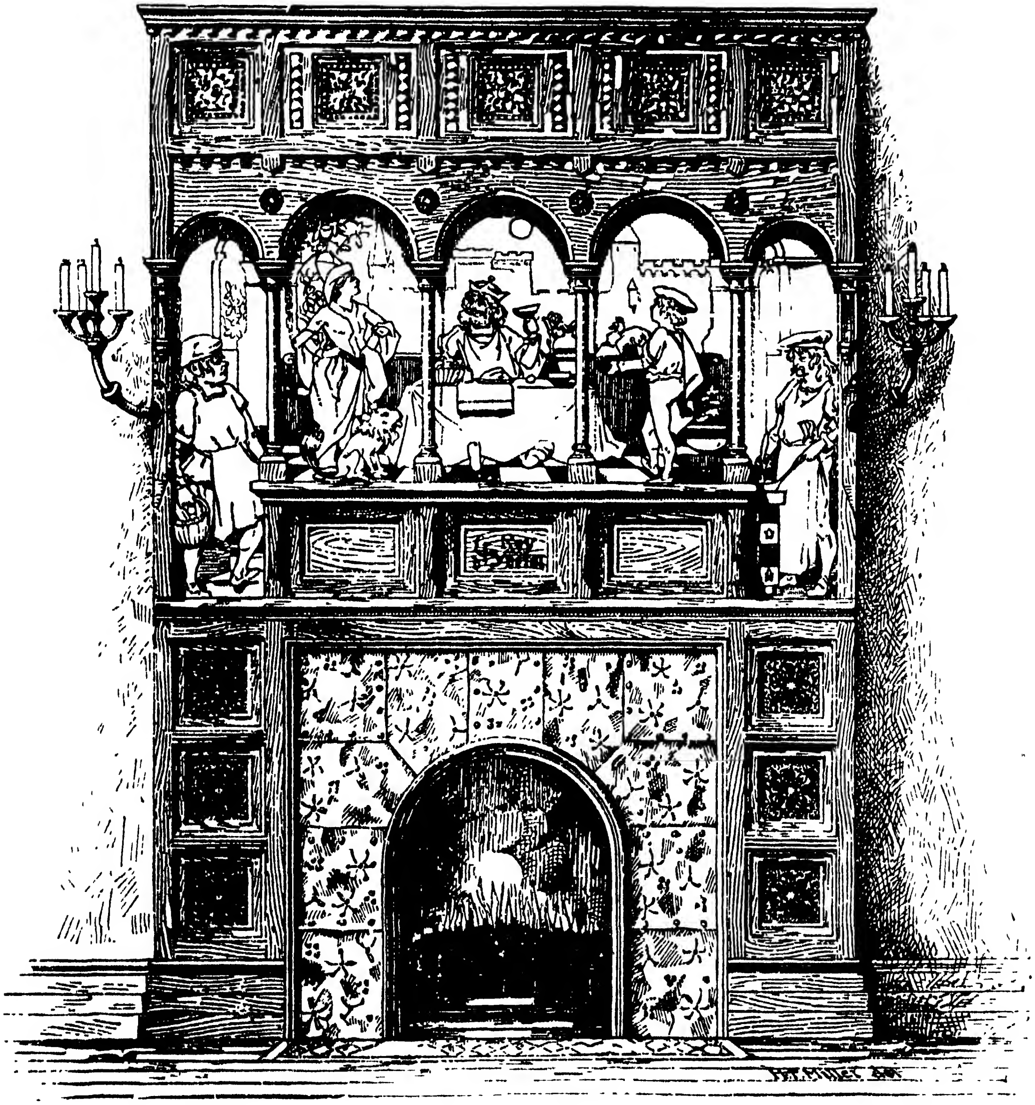


DESIGN 42.—TEXTILE PAINTING. DECORATION IN LOUIS SEIZE STYLE, AFTER RANSON.



Design 43.—Decoration for a Music Book, after Ranson

removed by placing the paints upon blotting-paper for a few hours before transferring them to the palette.



Design 44.—Textile Painting. Dining-room Overmantel Painted Tapestry Decoration.

The Colours.—Ordinary "tube" oil colours may be used, if they are not too gummy or oily, but the white must be ground "extra stiff." The ordinary tube white has so much oil mixed with it, that the canvas absorbs it to such an extent as to cause the paint to sink into the back and lose brilliancy.

The canvas should be stretched over a strainer, if any medium is used; otherwise it can be tacked up on the wall or over a drawing board. A piece of smooth burlap is good to put underneath. Care must be taken to have the ribs evenly stretched from side to side, otherwise the material will hang badly. Smooth out all creases before stretching, or they will injure the work.

Designs that cover the whole ground are best adapted to oil painting on tapestry canvas.

Vignettes are best put in with dye colours, for even with the best canvas the edges of the painting will "run," giving a greasy look to the uncovered parts.

Erasing.—The outlines should be drawn directly upon the canvas, if they can be accurately drawn without erasure. Otherwise pouncing must be resorted to. In no case must there be much erasing when wool canvas is used, for the working qualities will be seriously affected by it.

The manner of painting is so much like that in oil colours generally, that our very full instructions under the division of OIL PAINTING will serve nearly all requirements. We shall only add some general directions with special reference to flesh painting, which we think will be found serviceable for the class of "Boucher" subjects often chosen for tapestry painting.

The wide, unbroken surfaces of a picture, such as seen in sky or water, may be put in with dye colours used according to the directions already given. They can afterward be touched up with oil colours, if found too flat in effect.

The following will be found a very useful palette:—White, Raw Sienna, Madder Lake, Venetian Red, Emerald Green, and Neutral Tint or Blue Black.

For the first painting use Emerald Green and White for the shades and half-tints, and Neutral Tint and White for the accents of shade. Mix these colours with the white until a smooth paste is obtained.

Rub the brush into this until it is thoroughly charged. Then stroke it back and forth on the palette until you get an even surface of paint on the edges of the brush.

Go all over each shadow and hair shade with the green tint, using it lighter in half-light than in shade—that is, mixed with more white. Apply the paint to the tops of the ridges in the canvas.

The Neutral Tint is painted into the accents of shade in the same manner. Reserve the reflected lights very carefully, as they aid greatly in the after paintings.

Do not load the canvas with colour, but apply it with the same thickness over the whole surface. After the modelling is complete, take a large brush, such as is used in dye-painting—*i.e.*, an "extra stiff" brush—and rub the paint thoroughly into the canvas. Do this with even, "scrubbing strokes." If the paint has been kept well on the top of the ribs of the canvas, the result of this "scrubbing" will be to give the soft, blended effect characteristic of the regular dye-painting. The hair, drapery, and accessories may be modelled with the same tints.

When all this is thoroughly dry, put in the flesh colours with the following tints: Raw Sienna and White, Madder Lake and White, Emerald Green and White, Neutral Tint and White, Venetian Red and White.

Begin by painting in the shades with the Venetian Red and White, using the paint very thinly over the half-tints; put in the half-lights with the rose tint and the high lights with the yellow tint. Blend these well together, and then paint in the half-shades with the green or Neutral Tint.

But if the shadow tint has been used thin enough in the half-tints, it will not be necessary to use much of these colours. The accents can be painted of a more reddish tint by adding Madder Lake to the Venetian Red. The carnations of the cheeks and lips can be heightened by the use of a little Vermilion and White put on very lightly after the flesh tints have been blended. The colour of eyes, hair, drapery, and accessories can now be put in. In very blond complexions, Madder Lake, White, and Cobalt Blue will be useful in giving the violet half-tones. For the greenish half-tones of a brunette, Malachite Green can be used to heighten the half-tones already formed.

The high lights may be touched up with Orange Chrome mixed to a very light tone with White. This may seem a very strange colour to choose for combination with the above palette, but it gives a peculiar, luminous effect, very desirable and scarcely attainable by the use of any other colour. The reflected lights can be scumbled over with this tint and the accents of shade glazed with it, used very thinly and without much white.

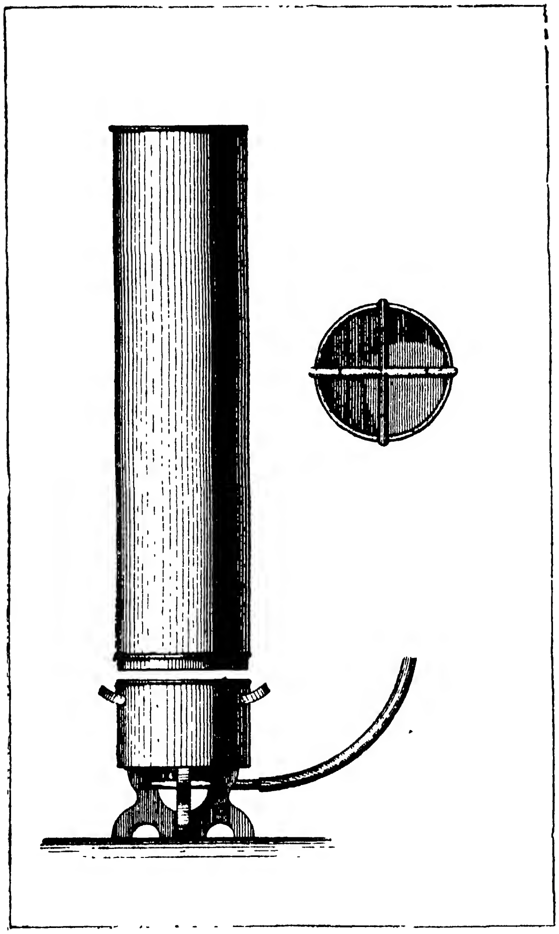


FIG. 140.—TEXTILE PAINTING. CYLINDER BOILER AND GAS STOVE FOR STEAMING PAINTED TAPESTRY.

The suggestions given for the treatment of "The Courteous Shepherd," one of the most graceful compositions of François Boucher (Plate A), although specially intended for painting in tapestry dyes, indicate an appropriate colour scheme for carrying out the same design in oil colours, for which it is equally adapted.

DISTEMPER PAINTING.

IT is not generally known that interior house decoration by the medium of distemper is within the reach of every one capable of using the brush with any degree of facility. The same ability which enables the amateur to decorate a screen will enable him to decorate a wall. It is only the knowledge of how to set about it that is necessary.

Distemper painting, as we know it in modern times, is painting with colours in which glue size is the fixative. The scenic artist is a painter in distemper, pure and simple, and the same materials which are utilised by him for the production of his stage effects can be utilised for the embellishment of our domestic interiors. There is a brightness and freshness about distemper, properly applied, which oil colours lack. The characteristic of decoration in oil, indeed, is heaviness, and an unpleasantly lustrous surface. Against decoration in distemper no such objection lies. Distemper is, moreover, nearly as durable as oil—quite as durable, indeed, in cases where the walls are dry. It is only by dampness that it can be affected or its beauties marred.

It has another advantage over decoration in oil which is by no means to be underrated. This is the speed with which it can be executed. Distemper dries quickly and without unpleasant smell; its methods of execution are simpler and its effects more readily produced. It can be used on almost any material, from silk down to wood, and the cheapest muslin or paper. No particular preparation is necessary for it, and the work once begun can be pushed steadily to a conclusion without wasting days for the colour to set.

Distemper decorations can be painted on any clean plastered wall, after an application of size. If an old wall is to be covered, the paper or muslin should be glued to the wall or to a frame, and given a preparatory priming, as for the painting of a scene.

The Size for distemper colour may be obtained at any Italian warehouse. The powdered colours are mixed with whiting, as follows:—

The Colours.—*Pink.*—Dissolve in water, separately, whiting and Rose Pink. Mix them to the tint required, and strain them through a strainer.

Lilac.—A little Indigo, finely ground in water, is mixed with whiting till it produces a dark gray; then add some Rose Pink. Mix well and strain the colour.

Light Gray is a little Lamp Black mixed with a large proportion of whiting. A wide range of shades may be obtained.

French Gray is made by soaking the quantity of whiting required in water, and adding Prussian Blue and Lake finely ground in water, in quantity proportioned to the warmth of the tint required. Rose Pink may be substituted for the Lake, but its effect is not so brilliant.

Orange.—Mix whiting and French Yellow, or Dutch Pink and Orange Lead, according to the tint required. This colour cannot be worked except in a size jelly, as the Orange Lead will sink to the bottom.

Buff.—Whiting and Yellow Ochre in water dissolved separately. A little Venetian Red may be added to give a warm tone. Mix with size and strain.

Drab.—Dissolve the whiting, grind some Burnt Umber very fine in water, and mix to the tint required. Raw Umber will give a different shade. Another shade is made by dissolving separately some whiting and Yellow Ochre in water, and mixing a quantity of each together, adding a little Lamp Black ground very fine. By adding a little Venetian Red, still another shade may be obtained.

Salmon may be made by dissolving whiting in water, and tinging it with Venetian Red.

Stencilling.—Painting upon brown or other coarse wrapping paper, when used as wall paper, is generally done with arabesque or geometrical designs, so as to mark out the lines of the dado or frieze with ornament, or to cover the frieze or dado, the latter with a diaper pattern, and the former with a large and bold design. What is known as water-colour stencilling is here brought into use, and the work is proceeded with as follows:—

Select the various coloured papers, and have them pasted to the wall by a paperhanger; then size them down with glue size melted in hot water, and strained of all impurities. Trace out the pattern for the border upon thick strips of brown paper, twenty-four inches long; lay them on a piece of glass, and with a sharp knife cut away all the parts inclosed between the lines forming the design, so that only those parts of the paper that form the groundwork remain. Before cutting out the design, see that no part of the pattern when cut through will take any of the ground away with it, as sometimes happens when a circle within a circle has to be cut, or interiors of arabesque designs. To prevent this, connect such pieces with the main part by leaving what are technically known as "ties" or "tags," which are narrow bars of paper across the open parts; arrange where these ties are to be placed before commencing to cut out, and never attempt to cut any pattern until all open spaces that might become detached are thus secured. Prepare several strips of the pattern before painting, as they become wetted by the colour and have to be laid on one side to dry. Take care that the strips join each other correctly, and render this a certainty by cutting guiding lines on all of them.

To apply the stencil, take a short, stiff stencil brush in the right hand, and hold the pattern against the wall in its right position with the left hand; fill the brush with paint, and carefully brush it through the holes of the pattern on to the wall, dabbing it on with a straight movement, so that no lines or streaks are made, but an even, unbroken surface secured. Press the pattern very tightly to the wall with the left hand, or the paint will run under it, and an untidy jagged edge, instead of a perfect line, will be made. Finish all borders to dado or frieze with broad lines of paint; make these by cutting them out as a stencil pattern. Dry the patterns, and clean them with a little turpentine before using them again.

Artistic Stencilling.—In ordinary stencil decoration the pattern is generally rubbed on in one tone of colour, and the arrangement of the design is, as a rule, a mere reproduction of parts prolonged indefinitely, according to the amount of space to be covered. Instead of plain flat treatment of the stencil pattern, one may produce, by cleverness of handling and artistic touch, a varied tone in the different leaves and fruit forming the pattern, either by working the stencil brush very slightly over a portion of the leaf, and increasing the strength of touch and amount of colour in the lower portion—by which a pleasant gradation of colour is carried out—or by the use of two or more colours in the same leaf or flower, carefully blended at the moment, and worked off into delicately-shadowed surfaces, by which an extremely good effect is obtained.

The general decorative effect is still, as it should be in this kind of work, quite flat and simple; but infinitely greater artistic character is given to the work, by the skill and feeling shown in the manipulation of the brush, and in the interchange of one or two colours, to say nothing of a fairly artistic rendering and decorative treatment of the design itself, by interchanging the stencil plates, and avoiding, as far as possible, any formal repetition.

Distemper Decoration on Silk.—The fabric should be glued to the wall, and painted over without priming. Flowers and figures in distemper on silks of dark colours give superb effects. The commonest varieties of silk are available for the purpose, and for friezes which are adorned with running decoration of any kind no material is better adapted.

STENCILLING IN OIL COLOURS.

For a complete decorative scheme the distemper process, just described, is preferable to oil painting for mural decoration in the home; but as the oil medium, too, has its advocates, we will give the usual colour mixtures when the latter is employed.

The colours chiefly used are Indigo, Indian Red, Ochre, Black, and White. Others are Vermilion, Indian Yellow, Lemon Yellow, Carmine, Prussian Blue, and Vandyck Brown.

Indian Red is lightened with Vermilion and darkened with Black.

Ochre is lightened with White and deepened with Indian Red.

Chocolates are made by mixing Indian Red, Vandyck Brown, Black, and a little Vermilion.

Neutral Tint may be made of Indian Red and Indigo.

Browns are made of Indian Red and Black, Vermilion and Black, or Carmine, Vermilion and Black.

Crimson.—Vermilion, Prussian Blue, and a little Vandyck Brown.

Green is lightened with Yellow and deepened with Blue.

Yellows are lightened with White and darkened with Vermilion.

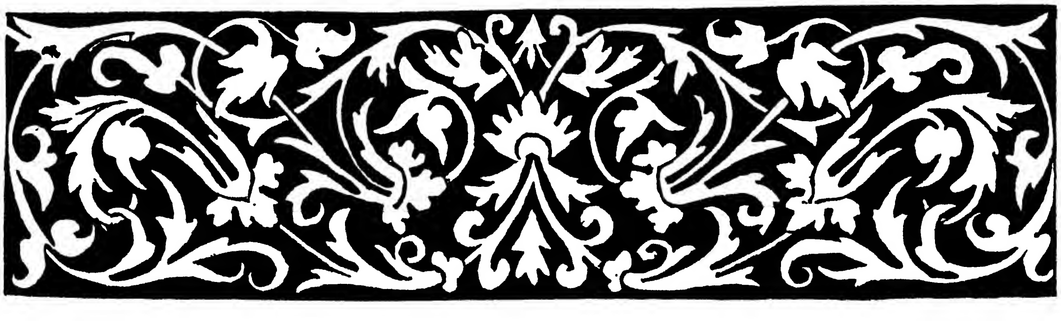
Light Blue is lightened with White and deepened with Indigo.

Vermilion is lightened with Yellow and darkened with Carmine and Chocolate.

Orange is made by mixing Vermilion and Indian Yellow.

Purple is composed of Indigo or Prussian Blue and Carmine, according to the hue desired.

For a list of harmonies and contrasts, see p. 58.



MINOR DECORATIVE PAINTING.

PAINTING ON SILK AND SATIN.

ONE may paint on silk or satin in opaque water colours, in transparent water colours, or in oil colours.

The fabric selected must be closely woven, and not much dressed. Silk should not be corded. Twilled silk is sometimes used, but it is so absorbent that it has to be treated with great care. Satin should be firmly woven and cotton-backed. Whatever the material selected, the colour of it should harmonise or contrast well with the subject, and must not be strong enough to overpower it. For white flowers, coloured or black (not glacé) silk is effective, and creamy white is usually suitable for coloured flowers. Nile green is also excellent. In satin, nothing is more suitable than pure white.

By using the colours very dry it is possible to dispense with any *sizing* preparation in painting on silk, and even on satin—upon which the colours are still more apt to run. But both materials are the better for a coat of sizing, which takes away the dressing. Great care must be taken not to wet the material too much, or it will cockle.

Sizing the Material, to prevent absorption of the colours, is the rule in painting in water colours, except with those artists who use gum water or the ill-smelling ox-gall. Some persons brush the silk over with white of egg, previously beaten until it begins to froth, letting it dry before applying the colours. More use a simple preparation of either isinglass or gelatine, which may be made as follows:—

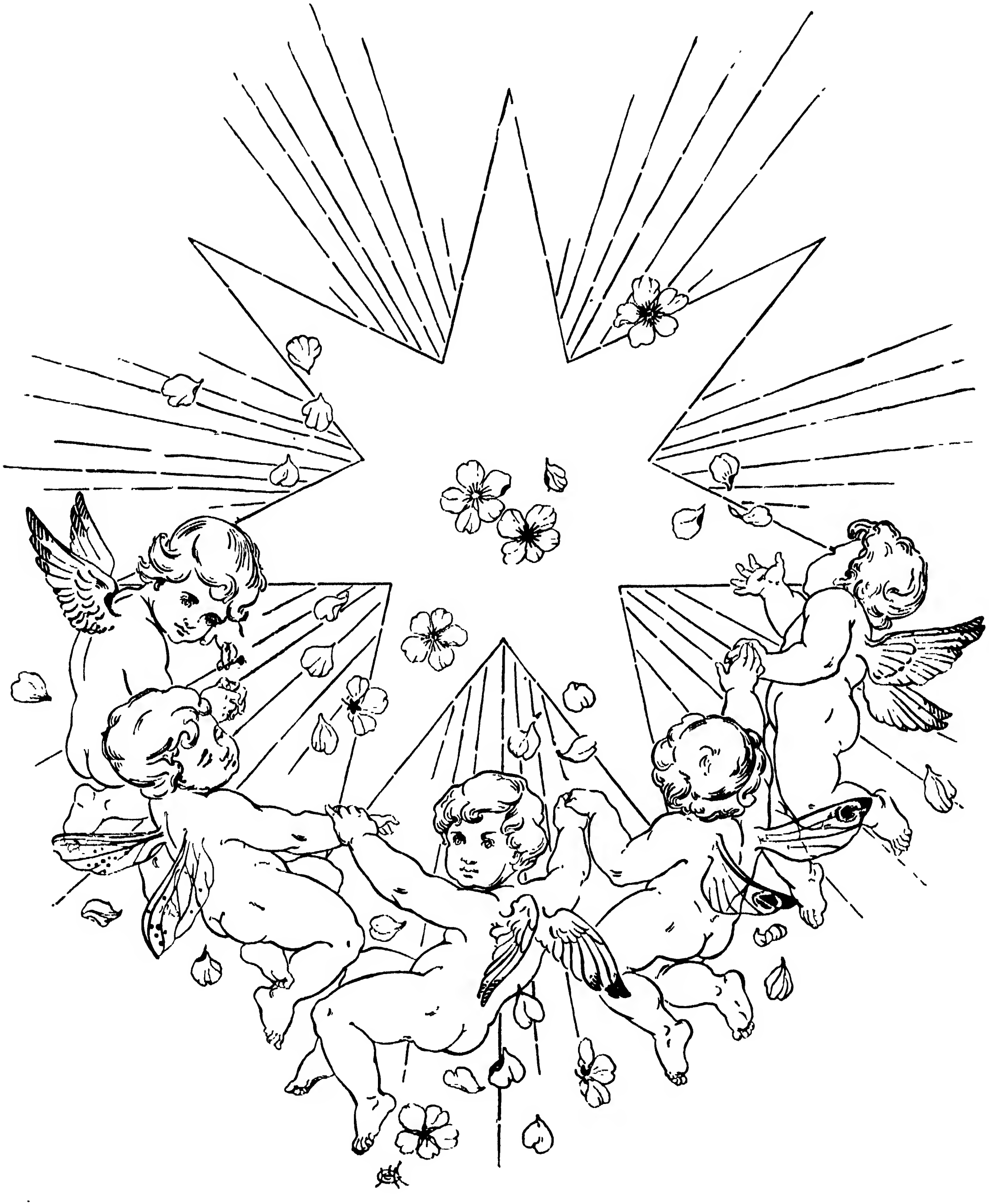
Dissolve in a pint of water one ounce of isinglass, or two ounces of gelatine, by letting it stand over-night. Then put the vessel holding the liquid in hot water, and apply the mixture while it is warm. By adding a piece of alum about the size of a large lump of sugar, and covering the mouth of the bottle with a paper cover with holes pricked in it to prevent mildew, the mixture will keep fresh for a long while. Apply it with a soft, flat brush, wetting the silk or satin completely, but not going over the same part twice. Wash from left to right as in painting. There will be enough of the mixture in the bottle to size several yards of material.

If you would be saved the trouble of preparing size, you can buy the preparation called "Aquarella" to use as a medium in water-colour painting, or you can get the "Adolfi" medium for oil painting. With one or the other of these you can paint in oil or water colours upon any absorbent material, and be sure that the colours will not run.

Painting Transparently in Water Colours is the more artistic method as applied to textile fabrics as well as to paper. Except on white or very light silk or satin, however, the ordinary colours cannot be used without some admixture of Chinese White. In the case of red, black, or dark-coloured silk or satin, water-colours should not be used at all; the red of the material is sure to strike through, and the black will be more or less absorbed. For dark materials oil colours will be found the most satisfactory.

Put a clean piece of muslin, folded double, underneath the silk, and fasten both securely to the drawing-board with pins. Common pins will do on the sides and upper part, but the lower side should be fastened with drawing tacks, so they will not interfere with the hand. The silk should lie very smooth and tight.

Having traced and transferred your design (see p. 233), draw it in with a hard pencil. Mix on the palette Chinese White with the lightest tints to be used. Paint the whole surface of the design with these mixed colours. By this we mean the whole flower or leaves, all the shadows and high lights. Do this in all cases, unless the silk is white. If you are painting on white silk you will not require the Chinese White at all. The painting will look more transparent if allowed to blend with the texture of the fabric. Be careful not to load the brush with too much moisture or too much colour. On white silk, therefore, wash delicately the colour of the highest light on the design, leaving in white flowers the silk for the high light. Then proceed with white or coloured silk in exactly the same way, *i.e.*,



Design 45.—Textile Painting Decoration. By C. G. Haité. (See p. 214.)

The original of the design was 33 by 27 inches. For Painting in tapestry dyes, either silk or canvas wool may be used. The natural écru tint of the former, or the creamy hue of the latter, will be sufficient background. Outline figures and the features with a dark, warm mixture of Sanguine, Yellow, and Indigo. When this is dry, put in a flat wash of Sanguine, very much diluted. Touch a little Ponceau into the cheeks while the surface is still wet, and pass a delicate shadow tone over the parts that recede, and on the lower edges of the limbs. A touch of prismatic colouring may be imparted to the wings. Paint the star lightly with Yellow, with a little Brown for the outlines and rays.

paint the middle tints, and, lastly, bring these into the deepest shades or shadows. Paint the whole stem in the lightest tint to be used, and strengthen on the shaded side.

Allow the silk to remain upon the board until perfectly dry. In almost all cases it will be found necessary to strengthen the shadows. A little clear, bright colour at this part of the work will add force and beauty to the whole.

Always iron out *before* painting, as a hot iron cracks the paint. Never leave silk or satin folded for any considerable length of time, for the wrinkles will then be difficult to iron out.

Use sables ; bristle brushes are too coarse.

Clean your brushes often in alcohol, for if the wrong tints are applied they cannot be changed easily.

Painting Opaquely in Water Colours.—The method is to cover the material with Chinese White, and when that is dry paint over it, with each of the colours mixed with Chinese White to render them opaque. (See p 60.) Very little shading is possible on silk, and less on satin. In painting on a white ground of either material, it will not be necessary to use a Chinese White foundation.

Painting in Oil Colours.—Use the ordinary tube paints. If the silk or satin is of a delicate hue, put out on blotting-paper a portion of such colour as you need, and let it stand until the oil has been absorbed. Then transfer the colours to a wooden palette, and while mixing the tones add a little turpentine. Turpentine causes the colours to dry very quickly and also prevents the oil from running. It is advisable to wait a little before taking up the colours mixed with turpentine. In a minute or so they will be partly dry, and, if carefully managed, sufficiently free from oil to allow of their being used freely on even delicate materials.

It is well to take the precaution, however, of rubbing the back of the silk or satin with a square of magnesia. If any of it comes through to the face of the material, blow it lightly off and go on with your painting.

On red or black satin, graceful, undulating sprays of passion-flowers and leaves, or lilies, or corn flowers, jasmine, acorns and leaves, honeysuckle, ivy, blackberries and leaves, white currants and leaves are particularly effective ; chrysanthemums, marguerites, forget-me-nots, orange leaves and blossoms, varying the tints of the fruit, also look very well. On white or light grounds, among other good floral subjects, are lilacs, wall-flowers, apple-blossoms, wistaria, dog-roses, and picotees.

PAINTING ON VELVET AND PLUSH.

In Water Colours.—One can paint on velvet in water colours by using a stiff bristle brush and scrubbing the colour into the texture. Put the design in with Chinese White, using a fine-pointed brush. The colours should blend with the fabric instead of lying on the surface, except in the case of the high lights, which can be added when the whole is dry. A good deal of white may be required with the colours to give them body, but this will depend upon the colour of the velvet, and it is best to experiment upon a small piece of the material to be used before painting the design. In all cases fasten the material tight upon the board, and do not remove it until the work is quite dry.

White or pale-tinted velvet of close weave and short pile is the best to use. So far as possible let the uncovered surface of the material serve for the high lights. If the pigment has not actually been plastered on—so destroying the beauty of the surface of the velvet—you can usually restore, by steaming, parts of the pile unavoidably flattened.

In Oil Colours.—It is easiest to paint on velvet with oil colours, using turpentine as a medium.

DYE PAINTING ON VARIOUS FABRICS.

It is possible to produce the most beautiful and lasting effects, elaborated to any extent, on a variety of materials other than the canvas specially prepared for painting with dyes. A special silk canvas is made in France and obtainable here, but one great objection to it is that it is of a deep écru shade, upon which one cannot portray flowers of delicate colouring ;

besides, it is so heavy that it is scarcely suitable for anything but draperies, such as portières, curtains, or lambrequins. White *faille* of a rich quality is most desirable if a white ground be desired, and upon this the colours can be fixed by steaming, as upon wool canvas; but the material must first be prepared by means of a special medium made for the purpose, which is brushed over the surface, and is allowed to dry thoroughly before commencing to paint it. The colours are thus prevented from spreading.

Silk.—The surface being prepared, one proceeds to work in the usual manner, using with the colours the ordinary medium, and painting with the hog-hair brushes, according to the instructions already given (see page 218), but it will not be found necessary to use quite so much force. The silk must, of course, be fastened on to a stretcher, and care must be taken to keep it perfectly even. The design can be pounced on, as before directed, or traced by means of transfer paper; or if preferred, it can be drawn freehand with a very finely pointed piece of red chalk. Avoid the use of black chalk, unless you can be sure of very accurate and delicate drawing; in any case, the lines must be very light and fine.

Satin.—The foregoing remarks apply equally to painting on satin. Only satin of good quality should be used, and if it be desired to fix the painting, there must not be a mixture of cotton in the fabric. In many cases there is no need to trouble about fixing; but if by chance the article should have to be cleaned—as in the case of dinner-table decorations, for instance—it is obviously desirable that the painting should be fixed.

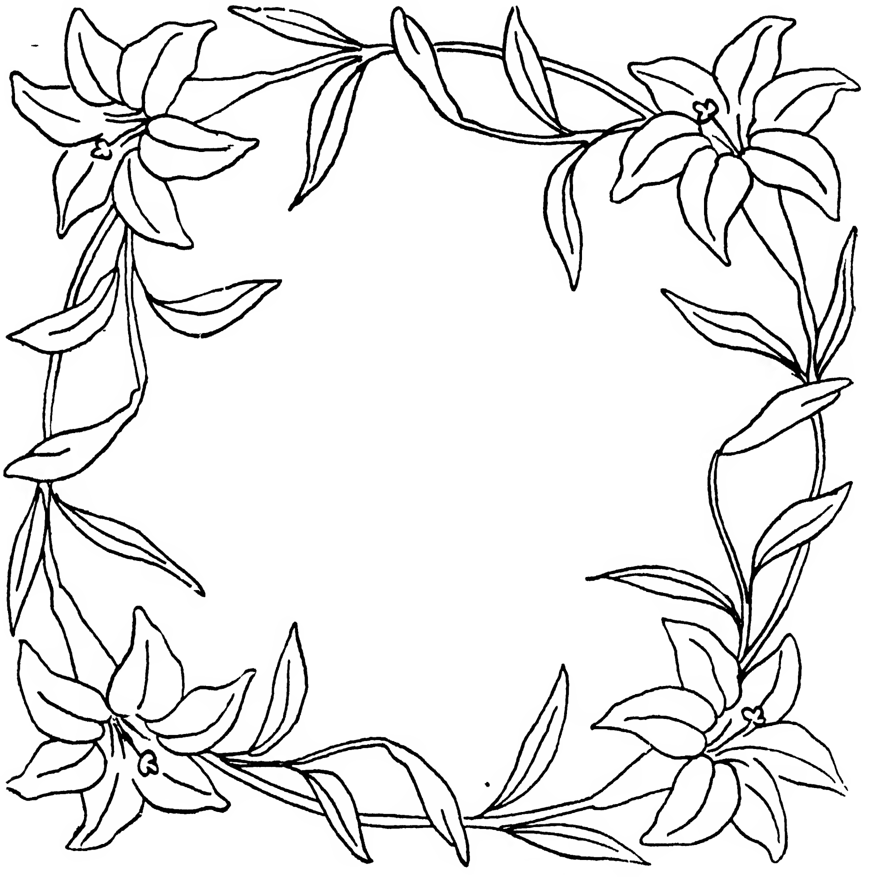
Silk Velvet and Moleskin are delightful materials to paint on, and the effect is rich in the extreme on either material. No previous preparation is needed, as with ordinary care the colours will not run on them, and the application of the medium necessary for silk or satin would render the surface harsh.

Moleskin and velvet painted with tapestry dyes make very beautiful covers for small tables. This method is also suitable for sofa-cushions, mouchoir cases, and various similar objects. As before remarked, in painting on these fabrics just the same method is used as for canvas. The material must in all cases be stretched, and the design clearly marked out before the painting is begun. Pouncing is the only satisfactory way of transferring the design to velvet or moleskin. If the velvet be of rather a full shade, then it is well to use a pounce bag filled with fine white ashes instead of a mixture of Burnt Sienna and charcoal, before recommended. On no account attempt to erase anything on any of these materials. If, unhappily, you lose the high lights, the only thing to be done is to use a little white oil paint, thinned with turpentine; but this should only be resorted to in extreme cases, where there is absolutely nothing else to be done.

In dealing with very thin silk, such as the Chinese silk used for sofa cushions, easel scarves and similar small draperies, first trace the design carefully. If the silk is sufficiently thin you will be able to see a clearly marked design through it, and you can draw it out with a piece of pipeclay. Next lay a very thick piece of blotting-paper flat on the table; over this pin out the silk on which the design has already been drawn; then take some medium and dilute it a good deal more than for painting on canvas. Mix your colours in the usual way, and prepare all the tints you will require before beginning to paint. You will need for this work sable brushes, not large. Have handy plenty of clean water for rinsing them in. The great difficulty here is the tendency of the colours to spread; but you cannot use the medium recommended for thick silk or satin, because it would stiffen the thin silk too much. The chief beauty of thin silk consists in its extreme softness. Do not fill your brush, and never run it quite up to the outline: always as you approach the edges press them down quickly with your thumb, so that the blotting-paper beneath takes up the superfluous liquid; blend the tints one into the other while wet, but use them separately.

For instance, suppose you are painting a Virginia creeper (this tells well on a yellowish-green ground), first put in the light tints, then bring them down to the rich reds and browns these leaves assume in autumn. This kind of painting so treated is very quickly done; often most unexpected and apparently mysterious shading is gained with scarcely any effort, and the exercise of a little care and common-sense is all that is needed.

Bolting-Cloth.—If painting on bolting-cloth, the blotting-paper should also be placed under it, though on this material the colour does not spread so readily. For sharp markings or veining of leaves take a fine-pointed brush, and put them in when the first painting is dry.



Design 46.—Suitable for Painting on Silk, Satin, or White Wood, or for Pyrogravure.

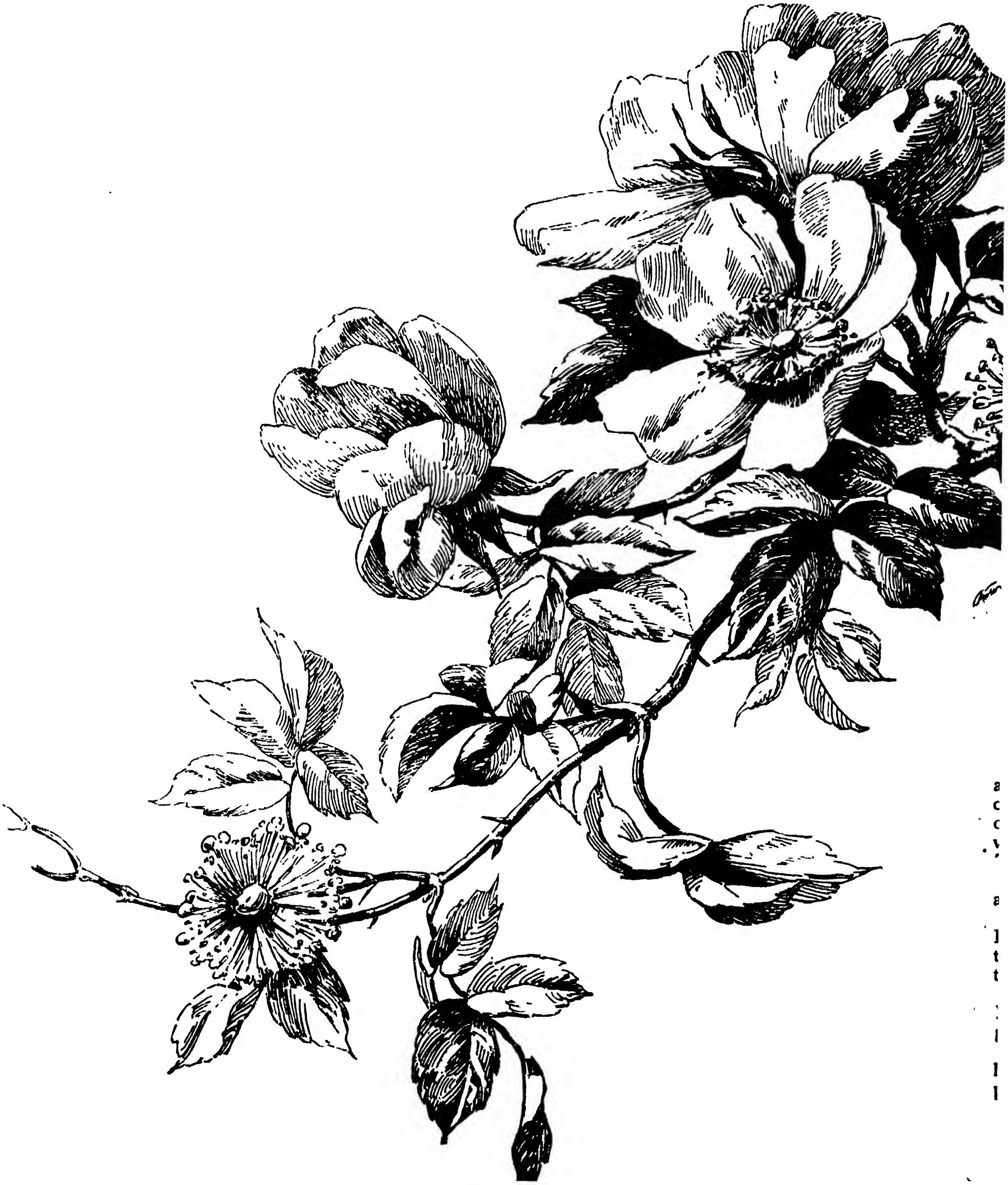
FAN PAINTING.

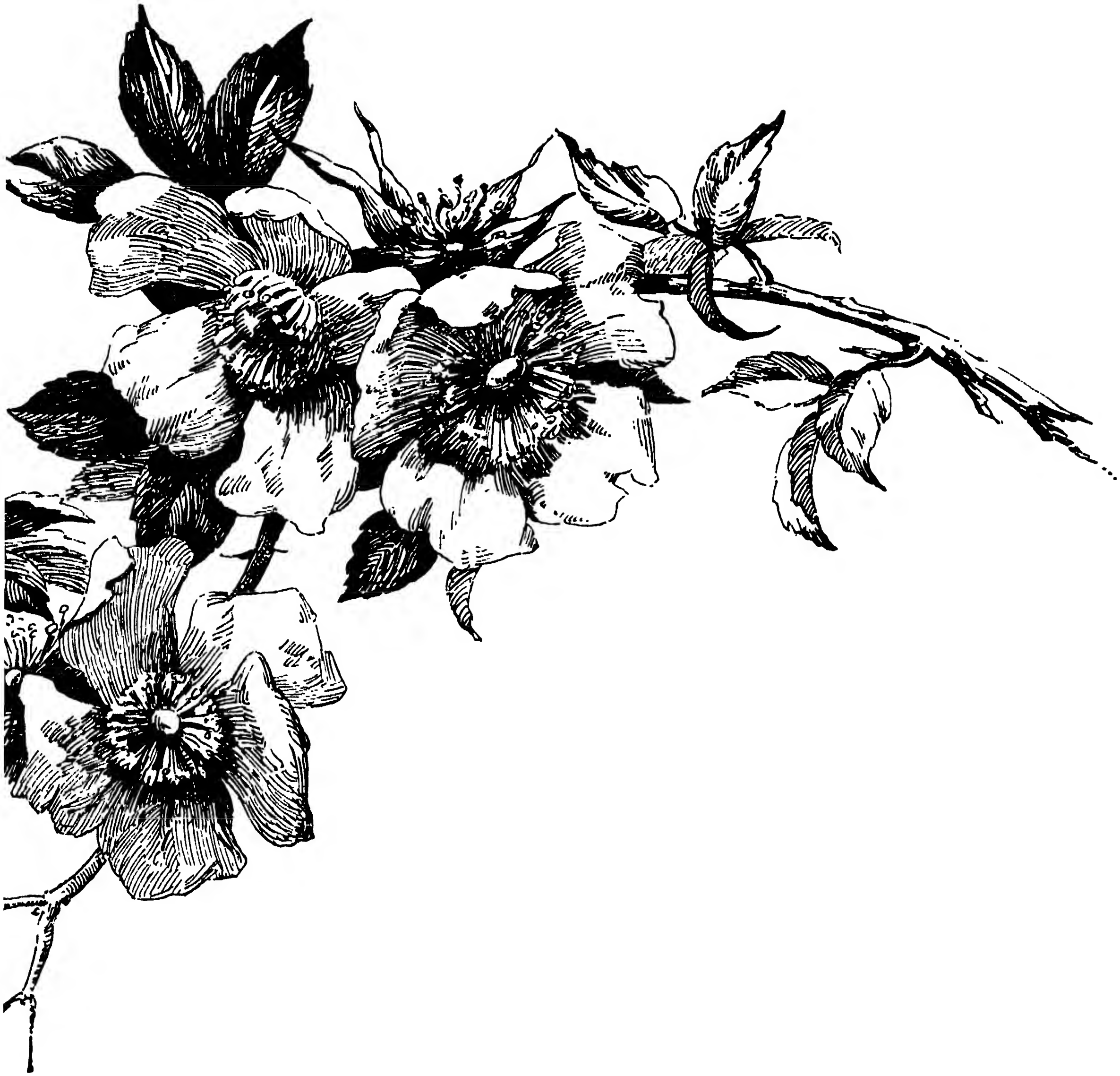
The first important consideration in painting fans is that the material be properly selected. If satin is to be used, that with the linen back and silk face, of the very best quality, is pr able to any other kind, even the most expen which is all silk, but is not so firm and sti the satin mixed with linen.

Material for the Mount.—In selecting choose either a firm *faille*, or else a gros-g with very fine cords, rather than the sm taffeta silks. Uncut velvet and crêpe lisse also used for painted fans. The uncut ve when made up is finished with a borde feathers. The crêpe lisse has a very effec finish of real lace; this is placed all around edge, top, bottom, and sides, being laid perfe flat upon the material, which is cut out beneat open spaces, showing the full beauty of the

Other materials used for fan-mounts chicken skin; fine kid (which is procure the glove factories); vellum, which may

Plate B.—Decoration (in Water Colours) for a Fan Mount. (Tea Roses.)





SUGGESTIONS FOR TREATMENT.—The design may be painted either with or without a background. If ackground be preferred, it should not be painted over the whole surface, but terminate in loose touches a lighter hue an inch or more from the extreme edge. Let it be pale blue gray. The flowers are all rich, amy yellow, growing deeper and more pink toward the centre. The stamens are rich saffron yellow, with rm reddish tones in the shadows. The leaves are of a medium shade of warm green, with reddish tips. e buds are saffron yellow, tipped with pink.

Almost any material suitable for a fan mount may be used as a ground in painting this design, and almost y colour will harmonise with the combination suggested.

For the Roses use Chinese White, Rose Madder, Yellow Ochre, and a little Lamp Black in the local tints. r the shadows add Raw Umber, and a little Burnt Sienna in the deeper touches. Add Light Red to the local e for the centres. Paint the stamens with Yellow Ochre, Light Red, Raw Umber, and Chinese White. In high lights add a little Cadmium.

The green leaves are painted with Chinese White, Antwerp Blue, Cadmium, Rose Madder, and Lamp ack for the local tone. In the shadows add Raw Umber and Burnt Sienna. In the lightest and warmest eens, substitute Vermilion for Rose Madder.

Chinese White is added to all the colours to make them opaque. Use medium-sized, very fine camel-ir brushes. If a foundation of Chinese White is used for the painting, a little glycerine mixed with it will event it cracking.

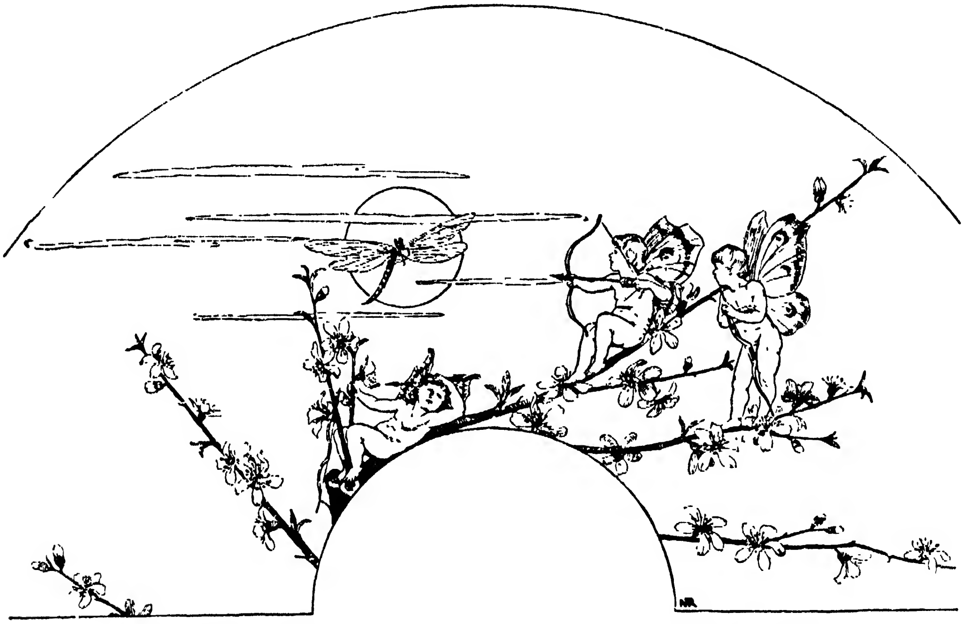
bought at the artist's colourman's, and olive, ebony, black walnut, and violet, satin, and sandal woods. Plain wood fans may be bought ready for painting on.

Preparing the Mount.—Before beginning to paint, if the material selected is such as satin, crêpe lisse, silk, or what not, it must first be mounted upon a drawing-board with several thicknesses of fine paper, or one of smooth cardboard underneath. Mount the material with the outline of the proper size of the fan sketched lightly in pencil or crayon without cutting it out; this margin is useful for trying the colour, besides keeping the stuff from stretching as it would do if it were cut out beforehand.

The mounting is done by putting a little glue or some small tacks in the four corners. The design, which should be something simple and effective, should be transferred to the material, not sketched in by the eye, as all corrections and erasures are to be avoided.

Transferring the Design.—The method of transferring is first to trace the design with oiled paper. Then take a sheet of tissue paper, or thin writing paper, the proper size, and scribble, so to speak, with a soft lead pencil all over it so as to leave no spot uncovered. Place this under the oiled paper, with the pencilled side next to the material, and with a finely pointed hard pencil or knitting-needle follow all the outlines of the design. On lifting the papers, a complete drawing will be found on the material beneath. Care must be taken not to press with the hand on any part except the outline to be transferred.

Tarletan is often used instead of tracing paper, and the work is thereby lessened. Place upon a drawing board the pattern to be copied, and pin both together at each corner with thumb-tacks. With an H B or B pencil carefully draw every detail of the pattern. Then remove the tacks, lift the tarletan from the pattern and hold it to the light: the whole design will be found on it. The tarletan is next laid upon the material to be marked, the pencilled side up. Pin both tarletan and material smoothly and firmly to the board, and with the pencil go over the design, pressing rather heavily with the pencil. Lift the tarletan, and the design will be found transferred perfectly to the material underneath. The tarletan with the same design may be used any number of times.



Design 47.—Painting on Silk or Satin, Decoration for a Fan.

WATER COLOURS.

The colours needed are Chinese White, Yellow Ochre, Vermilion, Madder Lake, Light Red, Cobalt, Antwerp Blue, Light Zinober Green, Terre Verte, Cadmium, Raw Umber, Vandyck Brown, Sepia, Burnt Sienna, and Lamp Black. With these colours any subject may be painted —figures, landscapes, or flowers.

The Transparent Method.—As has been observed in our general directions for painting on silk or satin, it is possible, by using the colours very dry, to avoid the use of body colours; but the ability to do this successfully is so rare that it need not be taken into account in these instructions, which are for the amateur.

The Brushes necessary are one rather large brush of good, firm, black hair, one medium-sized pointed camel-hair, and two small, fine-pointed camel-hair, one being very fine indeed, for the smaller touches and for drawing fine lines.

The Opaque Manner, which is the customary way of painting, is first to cover the whole design within the outlines with a coating of Chinese White, using the large brush.

Mixing the White with a little of the medium known as "water-colour megilp" makes it more flexible and adhesive. The megilp is used in the proportion of an eighth part, and thoroughly mixed with the palette knife before the water is added to it.

When the ground is dry, begin to lay in the colour in simple flat masses of light and shade, selecting a medium tone for each mass, which is neither the highest light nor the darkest shadow. All the colours must be rendered opaque by mixing them with Chinese White. When the first painting is dry, with a smaller brush begin to put in the half-tints which unite the masses of light and shade, and look for the highest lights as well as the darkest accents of shadow.

This being done, the painting begins to model in a simple, broad way. The fine details and finishing touches are now put in with a very small-pointed brush. It is very important that each painting or wash should be allowed to dry before painting again.

Too much finish is not an advantage in fan painting; the design must be kept simple and effective; this is done by keeping the masses as flat as possible, in the manner described.

Water colours will not rub off with the friction of opening and shutting a fan. In the opinion of many artists, they are preferable for such painting to oil colours, which sometimes in a warm room will stick together when the fan is closed.

A Black Gauze Fan.—The gauze should be stretched in a frame before the painting. If the fan is mounted it should be carefully pinned down upon a board. Paint the foundation of the entire design in Chinese White, and when this is dry float the colours over it, taking great care not to disturb it.

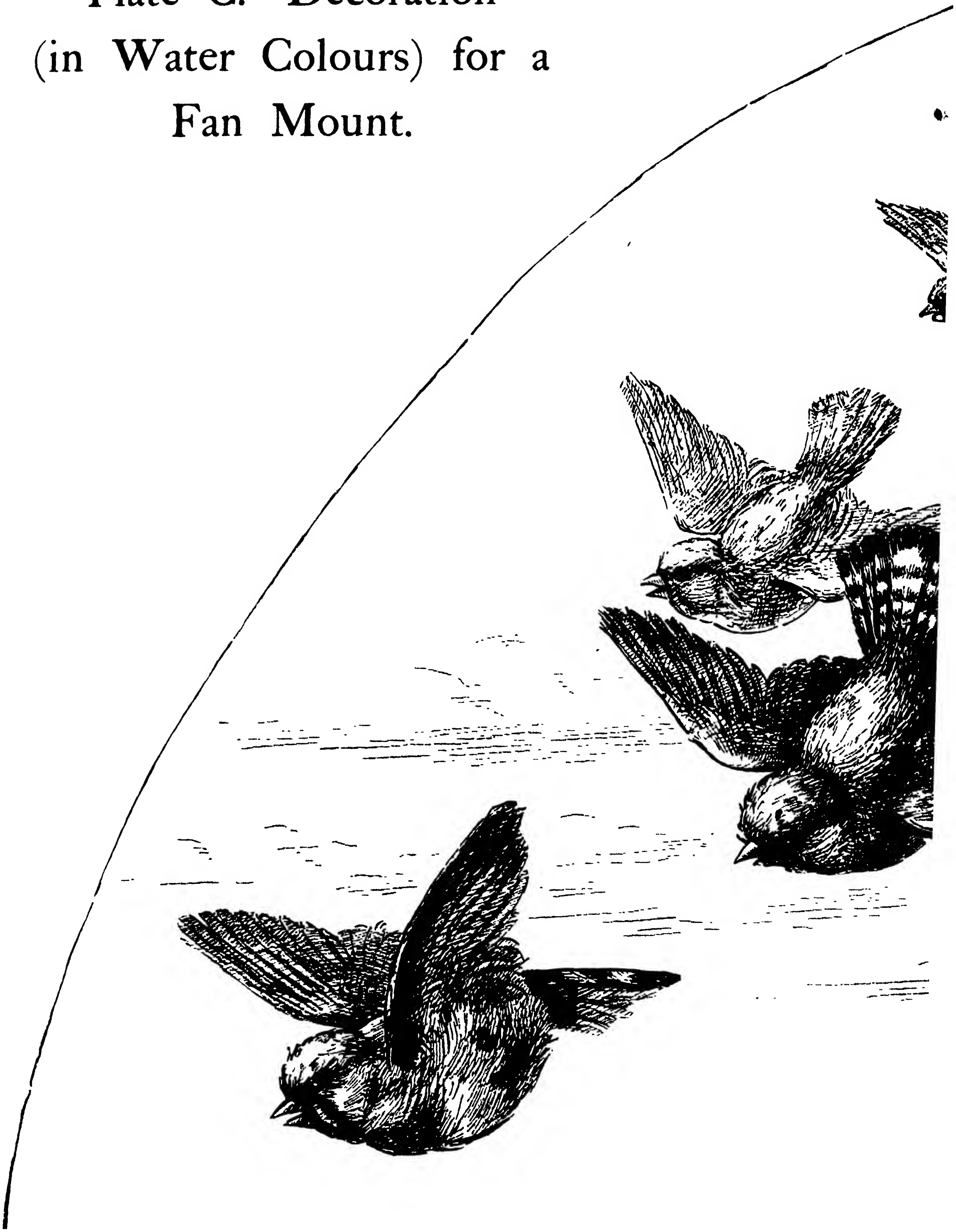
OIL COLOURS.

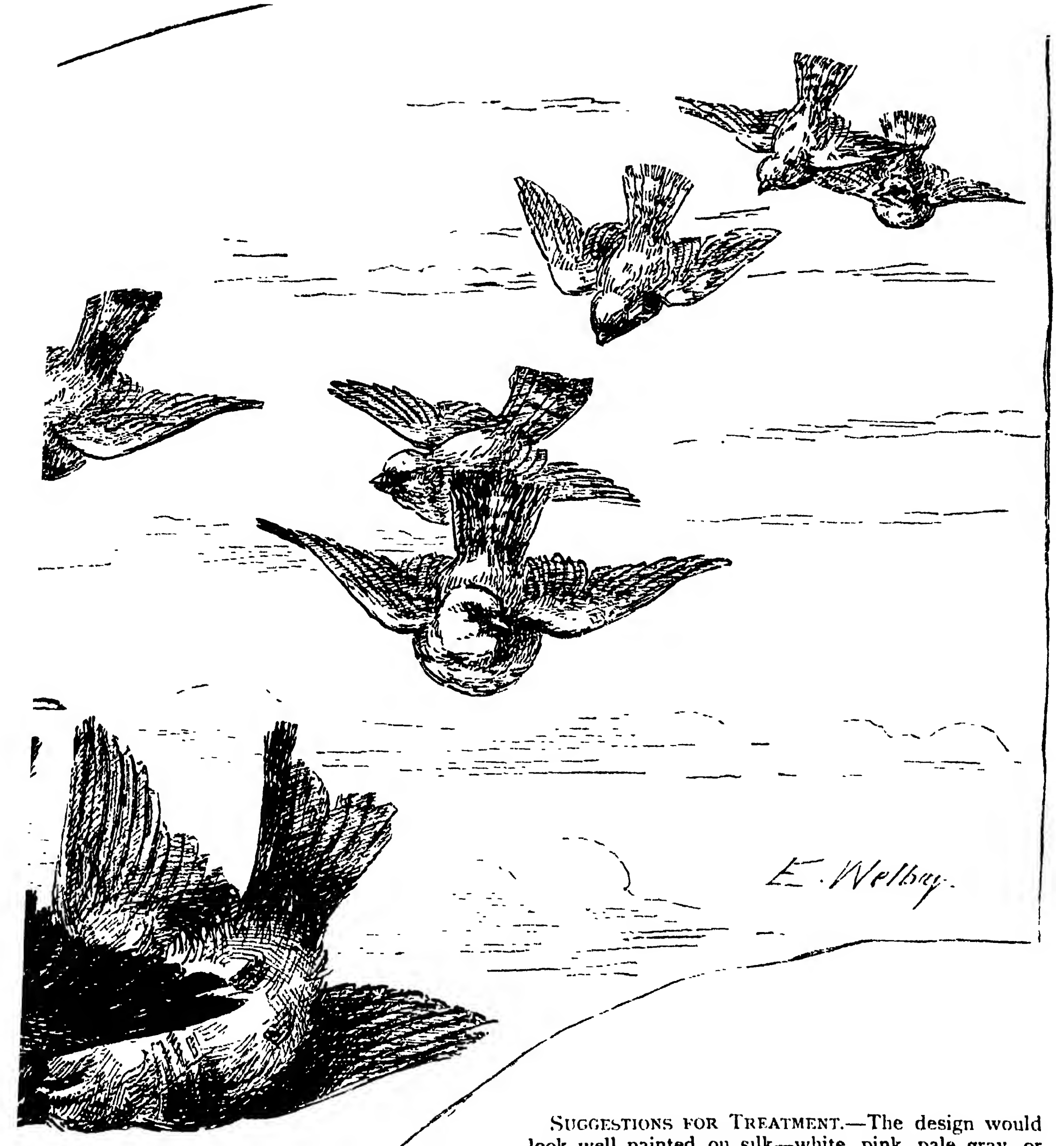
In painting on silk or satin with oil colours, they must be put out on blotting-paper instead of on the ordinary palette, so as to dry out the superfluous oil; they should then be thinned with turpentine or the Adolfi medium. Use flat bristle brushes and small, flat-pointed sables.

Sometimes, despite all your care, spots of grease appear on your work. To remove them lay several folds of brown paper over and under the material, and pass a hot iron over the whole, changing the paper as often as may be necessary. The application of benzine or turpentine will help to reduce the stain.

Tapestry Dyes, much diluted, on bolting-cloth, give a most delicately decorated fan mount. With such a design, for instance, as that on page 233, the effect should be charming. A very pale wash of Sanguine gives the local flesh tint. Hardly any shading is required, but for the little there is indicated, mix Sanguine, Indigo, and Yellow. For the outlines use a strong tint of the same mixture. For the (golden) hair add a touch of Ponceau to Yellow; shade with Brown and Yellow mixed. Paint into the butterfly wings all the brightest colours on your palette, but keep them delicate; put them on separately, and allow them to blend sufficiently to give them an iridescent effect. Treat the dragon-fly in the same manner, using Emerald Green and Ultramarine Blue alternately for the body, accentuated with Brown. Paint the blossoms

Plate C.—Decoration (in Water Colours) for a Fan Mount.





SUGGESTIONS FOR TREATMENT.—The design would look well painted on silk—white, pink, pale gray, or cream colour. Let the large birds at the left be a little beyond the middle of the fan. They are gray, with brown wings and soft red breasts shading into yellow gray; in the tails are seen touches of purplish-blue alternating with brown. The background immediately behind them represents soft white clouds shaded with gray. If the colour of the silk allows it, a little blue may be seen between the clouds. Use in the gray tones of the birds Chinese White, a little Lamp Black, Yellow Ochre, Rose Madder, and Cobalt. In the browner shadows add Sepia with Burnt Sienna. The blue feathers in the tail are painted with Chinese White, Cobalt, Yellow Ochre, Sepia, and Madder Lake. In the high lights use less Sepia and Madder Lake. In the deeper accents of shadow add Burnt Sienna and a little Lamp Black. For the blue feathers use Chinese White, Cobalt, Yellow Ochre, and a little Lamp Black, adding Raw Umber in the shadows. The claws and legs are painted with Chinese White, Yellow Ochre, Raw Umber, Light Red, and a little Lamp Black. For the beaks use Chinese White, Yellow Ochre, Raw Umber, Rose Madder, and Sepia. Put in the shadows of the clouds with Chinese White, Yellow Ochre, a little Lamp Black, Cobalt, and Rose Madder. In the high lights use Chinese White, a little Yellow Ochre, and a very little Lamp Black. For the red breasts of the birds use Chinese White, Light Red, Rose Madder, Yellow Ochre, Raw Umber and a little Lamp Black. In the yellow parts add a little Cadmium, with more Yellow Ochre, and omit Light Red.

with Ponceau; if too purple add a little Yellow. Make an olive green for the stems by mixing Yellow, Indigo, and Sanguine.

Vellum requires no preparation. The outline should be done very delicately with a moderately soft lead-pencil, and the false marks may be effaced, without much rubbing, with some stale breadcrumb. It is better, if you transfer, to use the tracing paper with black lead on the back, rather than blue or red papers. Care must be taken not to lean on the ivory tracing point while transferring. It would make an indented mark in the vellum, and interfere with the painting.

Mounting the Fan for Use.—When dry, the silk, or other material we have decorated, is taken off the stretching-frame and is laid upon a board on which grooved lines radiate from a centre. On this the mount is secured and marked along the grooves with a blunt instrument, such as an ivory paper-knife, care being taken that the lines do not cross any important part of the design, such as the head or face of a figure. The future folds on the fan will be indicated by these marks. The mount is next folded at the creases and cut level, top and bottom, with a sharp knife. If the material is thick, such as silk or satin, the sticks, of course, will not show through, so they need not be carefully finished above. If the painting is on gauze or crêpe lisse the sticks must be finely polished or carved.

The actual mounting is done in the following manner: The sticks are spread out at the proper distance apart, and carefully tied together so that they will not separate any farther. The under lining of the fan should be of plain fine silk or satin, and is, as a rule, less heavy than the front. It is cut out the exact size of the other, and both are carefully measured, folded, and then pressed with a warm iron till the folds are firmly creased.

BOLTING-CLOTH, FELT, CLOTH, AND CHAMOIS SKIN.

Oil colours are used on all these materials. Always trace your design on bolting cloth with a little paint thinned with turpentine; use a small sable brush to draw with; then work on your colour, thinned with the Adolfi medium. Do not put on too much paint, and keep it thin by adding the medium from time to time. When a gauzy effect is wanted, wash in your colour very thinly with turpentine, and you will have an effect similar to dye painting. Some artists dilute all the paints with turpentine on the palette before applying them to the cloth, and use no medium. Blotting-paper may be placed beneath the cloth while painting, to absorb the superfluous moisture.

Colours used in painting on felt or cloth should be washed on with turpentine, letting the felt form part of the shading of the subject. When it is necessary to have the paint very free from oil, blotting-paper can be used. If the paints are placed on paper that absorbs the oil, they will become so dry that some medium will have to be used to get them in working order. The Adolfi medium is the safest.

This applies also to painting on chamois skin, a material that may be applied to a variety of decorative purposes, such as card cases, tobacco pouches, button bags, work bags, blotting pads, and thimble and thread cases. The chamois skin should be first washed and then thoroughly dried and well rubbed before painting on it. Before applying the colours it is well to stretch it tightly by tacking it on a board or frame. The painting must always be done before making up the material.

WOOD, GLASS, TERRA-COTTA, AND CELLULOID.

Either water or oil colours may be used on white wood, but the latter have the richer effect. It is best to buy the white wood ready prepared; for it must be very well planed, and thoroughly seasoned, to prevent it warping. It must be sized before you begin to work on it with water colours. The size prevents the colours from sinking into the wood; it also fixes them and prevents them from running when varnished.

The size for water-colour painting is gelatine or isinglass dissolved in a little warm water. For oil painting use ordinary glue size; dissolve it over the fire, strain it through muslin, and use it while it is hot.

When using water colours, transfer the outline of the design to the wood, to avoid erasures or dirty marks on the white surface, and mix the colours with Chinese White, as in ordinary flower or fan painting; but do not attempt much shading, for the cleanness of colour, which is one of the beauties of the work, is quickly destroyed by overloading. When the painting is finished, fill a camel-hair brush with the size, and carefully cover the design with it, cleaning the brush repeatedly, and not allowing any colour to be transferred. Allow this to dry thoroughly, then varnish with the best white spirit varnish in a warm room free from draughts. Two coats of varnish will be necessary. Varnish the oil paintings in the same way.

Looking-glass is sometimes decorated with charming effect. Mirrors with garlands of flowers suspended from the upper part look well if artistically painted, and birds are sometimes effectively represented perched on a branch extending from one side of the frame. Care should be taken in all cases not to cover so much of the glass as to render it valueless for its legitimate purposes. A well-known artist who has had the misfortune to have the large mirror in his drawing-room badly cracked, has concealed the damage so effectually, by painting over it an iris and leaves, that no one suspects the occasion of the decoration, and he is generally complimented on its beauty.

The design may be first outlined on cartridge paper, and then drawn upon the mirror with a lithographic pen and lithographic ink.

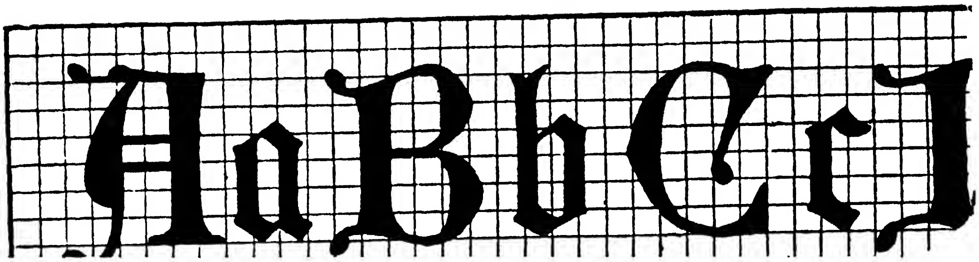
When the outline is dry, fill in the design with a coat of Flake White oil paint, with a little Siccatif de Courtray mixed with it as a dryer. When this ground is dry, paint over it with oil colours mixed with Robertson's Medium, so as to obviate the necessity of varnishing.

Transparent Painting on Glass is done with varnishes of many colours, which may be bought ready prepared The glass should be carefully chosen, free of bubbles or other irregularities. It should be thoroughly cleaned; first with whiting, and afterward with water mixed with a little vinegar. The outline is first drawn with a fine brush and black or brown oil paint, which, being opaque, defines the subject strongly. The coloured varnishes are applied when this outline is dry (the drying may be hastened by the addition of a little siccative). The tints are kept flat and not modulated. The effect generally aimed at is that of a brilliant transparency; but parts may be occasionally treated in opaque oil paint, with extremely good results.

Terra Cotta must have its ground prepared with a coating of neutral gray paint mixed with turpentine. Let this dry thoroughly first, then rub down the inequalities of the surface with a piece of fine sandpaper slightly damped with clean water: you will then have a good ground to paint upon. It is well to mix turpentine with the colours in the first painting, though poppy oil is better afterward. Let the preparatory coating of paint be put on very thickly.

Celluloid for painting on in water colours should be prepared in the same way as ivory is for miniature painting (see p. 121). The polish must be taken off it, and the surface renewed by scraping it with a piece of window glass, using the edge that has been made by the diamond. It must then be rubbed with dry emery powder, until it is reduced to an even, neat surface. After dusting off the emery, a slight wash of a solution of alum in the water will take away any greasiness that there may be, and the work may then proceed with ordinary water colours. Some, however, prefer to rub in a ground of Chinese White. Care must be taken, as in working on ivory, not to touch the plaque with the fingers.

When painting in oil colours upon celluloid, it is necessary to use a strong dryer, made of equal parts of gold size and spirits of turpentine. The colour is applied thinly with a sable brush.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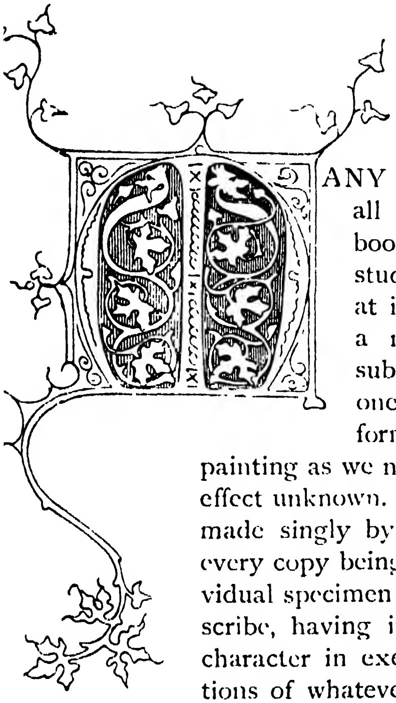
ILLUMINATION.



Design 48.—Illuminated Initial.

MANY centuries ago, in all countries where books were made, men studied it and worked at it all their lives as a means of gaining subsistence. It was one of the principal forms of art, pictorial painting as we now see it being in effect unknown. Books were then made singly by hand throughout, every copy being a fresh and individual specimen of the skill of the scribe, having its peculiarities of character in execution, and variations of whatever ornament might be added to it, so that whoever possessed a book had a production unique in its workmanship, and made beautiful by the art of the illuminator in such a manner and to such an extent as he might desire and have the ability to pay for.

Then came the invention of printing, whereby copies of a book were multiplied as though cast in a mould, each one being a counterpart of every other. That was the doom of scribes or copyists and illuminators, although for a long time after books began to be made by printing instead of writing, blank spaces were left wherein large and important initials might be drawn and painted in any style to suit the owner.

In comparatively recent years, with the revival of Gothic architecture, with which Illumination in its best period was contemporary, the art itself was revived, and to-day the practice of it in thousands of cultivated homes is justly regarded as one of the most delightful of artistic home occupations.

I. IMPLEMENTS AND MATERIALS.

The painting is done in opaque water colours in accordance with the methods of that process already described in these pages.

The outfit is simple.

To begin with, a good drawing-board, with a T-square long enough to reach across it, is indispensable. You will also need:

Two set squares or triangles—one of forty-five, and one of thirty and sixty degrees—for drawing parallel lines, angular diapers, etc.

A pair of dividers, for measuring and spacing the different parts of the design.

Compass with shifting pen and pencil legs, for drawing circular curves.

A bow pen for drawing small circles.

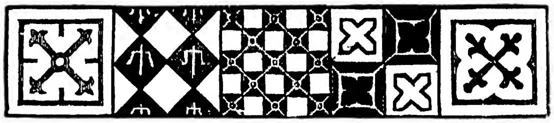
Mechanical drawing pen for using with a straight edge or curve.

Two or three hard-rubber curves of different proportions will be found very useful to guide the drawing pen in outlining some of the ornaments.

An agate burnisher: the straight or pencil form is the best for general use, as the side may be employed for flat burnishing, and the point for dotting or otherwise enriching the gold grounds.

A tracing point, either ivory or steel.

Ordinary pens and pencils, such as may best suit you for drawing with; transparent tracing paper, and black-lead transfer paper.



Design 49.—Illuminated Diaper Ground. From an Early French MS.

Brushes.—You must have one or two large brushes for washes and large grounds, and six or eight, from middling size to the very smallest, for the rest of the work. This number is absolutely necessary, and it will add greatly to your convenience and ability to keep the colours pure and bright if you have more of the smaller ones, so that you can keep a brush for each colour. In particular, the brush for gold, that for black, and that for white lining should never be changed to any other colour. It is very difficult to clean brushes perfectly which have been filled with body colour, and the cleaning wears and injures them more than actual use.

Red sable brushes are the best, and you should have two or three of these for your smallest ones to do very fine lining with, as sables have a springy firmness which no other brushes possess: but for the larger brushes a cheaper material is perhaps quite as good.

A good, firm, camel-hair brush will lay on all flat body colour quite as well as a more expensive one. But every brush that you use must hold a good point when filled with colour, or it will be a continual source of vexation.

A large soft brush, to be kept dry and used for dusting off the work when necessary, is also a very good thing.

Lastly, and of great importance, a small ground-glass slab, and a palette knife for mixing colours. Do not use your brushes for this purpose, or you will soon destroy them. Mix each tint thoroughly with the knife on the slab, and put it in a little saucer by itself; thus you will keep your colours pure and your brushes in good shape. These little saucers you will get with the other artists' materials. Some fifteen or twenty, from an inch to an inch and a half in diameter, will be useful.

The Materials.—When time and expense are not to be considered of any account as against the desire to have a sumptuous piece of work, vellum cannot be surpassed as a ground for illumination; but the beginner will be able to do much better work on paper; and, indeed, paper and cardboard are now made of such variety and excellence that you need wish for nothing better. London or Bristol board of the best quality, or any drawing paper, may be used if it has a fine, smooth (not glazed) surface, free from loose fibres or hairs. If paper is used choose that of an ivory or creamy tint rather than that which is pinkish or bluish. The gold and colours will appear much richer, and at the same time sweeter and more harmonious when displayed upon the former.

The Colours.—Much the best results are likely to ensue from confining yourself to a few carefully chosen colours which you may learn to know thoroughly, both singly and in combination, and which may be depended on as being always of the same character and quality.

The following colours may be considered really necessary:—

Yellows. — Cadmium Yellow, Gamboge, Lemon Yellow.

Reds.—Carmine, Crimson Lake, Indian Red, Rose Madder, Vermilion, Orange Vermilion.

Blues.—Cobalt, French Blue.

Greens.—Emerald Green, Oxide of Chromium, Burnt Sienna, Vandyck Brown, Lamp Black, Chinese White.

II. COLOURS.

Before proceeding to the actual work, it will be well to understand what the nature of the colours already chosen is, whether unmixed or combined with others, in order to form the different colours and tints required by the design. We will begin with the yellows.

Lemon Yellow is a vivid light yellow, nearly opaque, serving to lighten many of the other colours by mixture, and answering by itself for sharp, bright lights, even upon gold.

Cadmium Yellow is a deep, rich, glowing yellow, semi-transparent, of great power, both alone and in combination.

Gamboge is a bright transparent yellow, working well in washes, and useful in mixing, glazing, and sometimes laying under other colours.

Crimson Lake is a rich transparent red of great depth and strength, washing well, and mixing usefully with many other colours.

Carmine is a beautiful transparent red of great brilliancy, working best by itself, and although brighter, not so generally useful as Crimson Lake. Its brightness may be enhanced by laying a wash of Gamboge on the paper, and the Carmine over it.

Rose Madder is a light transparent pink, very delicate in character, but effective on account of its purity. When lightened very much with Chinese White it forms a more delicate pink than any other red.

Orange Vermilion is a bright scarlet of great value, opaque, and can be used to advantage, either by itself or mixed with white or other colours.

Vermilion is a powerful opaque red, of a much deeper and more crimson tone than Orange Vermilion, but of the same general character.

Indian Red is a deep, dull, opaque red, very useful by itself, and in some combinations. It is very powerful, and in mixture with lighter colours must be used with caution lest it outweigh them.

Cobalt is the lightest of the blues. It is a nearly transparent colour, mixing well with white, and forming a pale blue corresponding in clearness and delicacy to the pink of Rose Madder and White.

Ultramarine is a much deeper blue, rich and transparent, mixing well with white to form blue grounds, and making with different proportions of Crimson Lake purples of great depth and beauty.

Emerald Green is a bright, semi-opaque green of much importance, although it must be used sparingly in a design to obtain its greatest value.

Oxide of Chromium is an opaque, deep, dull green, sober but rich, making good backgrounds by itself, and mixing well with Lemon Yellow, Emerald Green, and some other colours.

Burnt Sienna is a deep, rich, transparent brown orange colour, working well by itself, and serving to modify many other colours.

Vandyck Brown is a transparent, deep, clear brown, which works well, and is the most generally useful of all the browns for illumination.

Lamp Black is a solid and dense black, drying "dead" or without gloss, and having no tendency toward brown. It is a perfect black.

Indian Ink dries with a gloss, and it is useful in illumination for outlining, mixing with Lamp Black for lettering, etc., for making grays by washing or by mixing with white, and for combining with other colours to sadden them.

Chinese White, besides being mixed with all colours to make them dry flat and with a "bloom," and to lighten them to a proper tint, is used also by itself for delicate lining and dotting on all colours in finishing up the design.

There is nothing superfluous in this list. It is quite true that what may be called illumination can be practised with a very much smaller outfit. You can with a common pen and black and red ink produce ornamental lettering of a very good kind, provided you have the taste. Add to this a cake of Indian Ink and one of Vermilion, with a brush, and much more can be done. If, besides these, you indulge in the luxuries of a cake of Ultramarine and a saucer of gold, you will be able to produce gorgeous work at slight expense, except of time. But being supplied with the colours and appliances which have been described, you need not fear to undertake the very best work which your knowledge and skill may be capable of achieving.

III. FIRST STEPS.

In order to have any prospect of doing really good illumination, you must begin by copying what was done by the men who devoted their lives to the art. The original work may not be within the reach of every one; but good copies of it, so far as form goes, with descriptions of the colour, and in many cases the colour itself, at least to the extent that chromatic printing is able to show it, have been published in such numbers that they can always be obtained. Do not copy modern designs until you have studied the ancient sufficiently to have acquired judgment. Doubtless there are good designs of the present time, but they are seldom seen.

If you have in your own possession the example which you wish to copy, you can begin at once by tracing it. Following the lines carefully throughout a design helps to make you familiar with the forms, perhaps, as much as any other practice. If the design is so circumstanced that you cannot be permitted to trace it directly, make your first drawing on ordinary paper, carefully comparing with the original and correcting as you go on until it is satisfactory; then make your tracing from that. While tracing you can, by shifting the paper and otherwise, make little corrections which may be needed. Now prepare the paper or board, for the finished work. If you use paper, damp, stretch, and fasten it to the board, as for ordinary water-colour work; if vellum, do the same, and then give the surface a slight wash of water with a few drops of liquid ox-gall added; if you use heavy London or Bristol board, damping is not necessary. Lay your tracing upon it in the proper place, being careful so to arrange it that the T-square when moved along the side of the drawing-board will coincide with the straight horizontal lines of the design, in order that it may be afterward used in ruling them, and by means of the set square doing the same to perpendicular lines.

Tracing.—Fasten the two upper corners of the tracing paper in any convenient way, by pins or wax. Slip the transfer paper under it black side downward, and go firmly but not heavily over every line with your tracing point, lifting up the tracing occasionally to see that you are going on right and missing nothing until it is completely shown in faint lines on the surface beneath. This being done, remove the tracing and make all your outlines firm and satisfactory with a fine pencil, or if it is very intricate and elaborate, with the indelible brown ink; this makes a pale brown line, which when dry may be wetted and worked over with colour without danger of disturbing it. Straight lines you will rule with the pencil or mechanical pen and straight edge.

Having got so far, if there is any body of black text, finish that completely before going on with any other portion of the work, being very careful while doing so not in any way to soil or grease the other parts of the paper.

The use of Gold.—If you intend to employ gold leaf in your work, it should be put on now and the burnishing done before any of the colour is laid on, for if the burnisher rubs over any of the tints, both it and they are liable to be injured.

The gold is sold in small books, each containing twenty-four leaves, rather more than three inches square. For attaching it to the paper or vellum sundry preparations are sold by the dealers, such as "water mat gold size," "burnish gold size," etc. There are also recommended for the same purpose, white of egg, gum-arabic and gelatine dissolved together, gum-arabic, gum-ammoniac, and Armenian bole (a kind of red earth) ground together in gum water, and many other adhesive mixtures. With one of these you paint over solidly the place you wish to gild. Take your book of gold and cut out pieces of such size as may be necessary, the most convenient way of doing which will be to use sharp scissors and cut through paper and gold together; the gold will adhere to the paper at the cut edge, and you can handle both together. Moisten, either with water or by breathing upon it, the ground which you have already laid, and the gold being applied thereto will at once adhere, and may be softly pressed down with a little wad of loose cotton, and left to dry, after which it may be burnished.

But the knack of handling gold leaf, simple as it appears in the hands of an ordinary workman, is only to be acquired by much practice. The amateur will find it safer to use gold paint—the pure metal sold in saucers or shells.

IV. COLOUR COMBINATIONS.

The peculiar "bloom" of the flat grounds of the prevailing body colour contrasts agreeably with the brilliancy of the burnished gold, and the depth and richness of the colour which is used transparently in some places.

In beginning to colour the drawing, you will be called on in the first place to mix the flat tints, which are the foundation of the work; and as helping to this end, and as a general guide to the behaviour of the colours in combination, we give below a number of combinations which will be very generally of use.

Blues.—A somewhat dark blue for grounds is made of Ultramarine and Chinese White.

A perfectly pure light blue without any gray tinge is made of Cobalt and White.

A beautiful turquoise blue, of Cobalt, a little Emerald Green, and White.

Reds.—The purest light pink is made of Rose Madder and White.

A strong deep pink, of Crimson Lake and White.

A warmer pink, running from scarlet through coral pink up to a light flesh tint, is made with different proportions of Orange Vermilion and White.

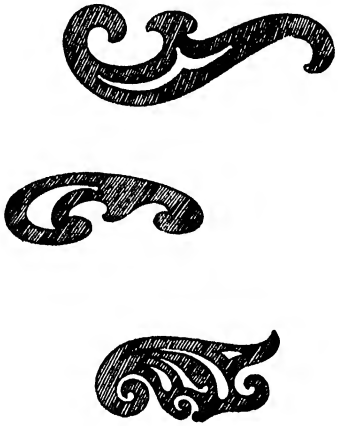


FIG. 141.—RUBBER OR WOODEN CURVES USED IN DRAWING LETTERS AND ORNAMENTS.

Other occasionally useful pinks may be made with any of the reds and white.

Indian Red, Vermilion, and Orange Vermilion do not need White to make them opaque.

Indian Red, either by itself or mixed with Carmine, Cadmium Yellow, or other colours, makes a rich deep red for backgrounds, of a chocolate or russet hue, according to the colour mixed with it.

Purples.—The richest deep purple is made with Crimson Lake and Ultramarine in varying proportions and white sufficient to bring it to the right tint.

For a light purplish or lilac tint take Rose Madder and Cobalt with White.

Greens.—A pure light green tint is made of Emerald Green and White.

A warmer apple green by adding Lemon Yellow or Gamboge to the above.

Oxide of Chromium, either by itself or mixed with Emerald Green, Lemon Yellow, or Cadmium Yellow, forms a background, on which diapering, dotting, lining, or ornamentation of any kind in gold is very rich and harmonious.

Rich and useful browns may be made by almost any mixture in which warm colours predominate. Unless at least one of the colours used is opaque, they must be mixed with white, if intended for backgrounds.

V. MANIPULATION.

Always keep your compound tints clear and pure in tone ; no matter how dark they may be, do not let them become muddy or dirty. The prime characteristic of good illumination is exquisite purity and brightness of colour.

In order to mix any of these tints, you will clean perfectly your glass slab, and placing upon it as much as you may think necessary of the Chinese White from the bottle, work it with the palette knife until it is perfectly soft and uniform in substance. Then take a little of the colour you want, say Cobalt, and work it into the white, still with the palette knife, until you have the desired tint. Consider well the depth of your tint with regard to its appearance when finished ; remember that it will be modified in effect— made darker or lighter to the eye —by the white or the pure colour which is to be worked over it.

In taking the colour from the pans use a clean penknife or other convenient tool, and never put your brushes into them. By this means you will preserve both your brushes and the purity of your colours. Also be careful to keep all dust from them. It cannot be too strongly insisted on that cleanliness and nicety in every detail are of the utmost importance. Illumination can rely upon no picturesque or accidental effects to cover up slovenly work, but must be delicate as well as brilliant throughout, like a perfect piece of jewelry.

Mix your tint to about the consistency of cream, and with your palette knife remove it to one of the little saucers. Take a brush of such size as will be most convenient for the space you have to cover, and having wet it and brought it to a point, dip it in the tint and fill it so that when applied to the paper the colour will flow easily from it. Begin at one corner of the part you are to colour, and work along with short strokes, covering the ground perfectly as you go. Do not rub the colour on, but, working lightly, let it flow from the point of the brush, renewing it from the saucer as soon as the flow diminishes, until you have covered the desired space with a perfect coat of colour. Do not go over or touch any part twice with the brush, and do not let an edge dry before you lead the colour along from it, so that no joining may be perceptible. When rightly done, the colour will settle down as it dries into a dead, flat, enamel-like surface. There should be no waves, spots, or streaks apparent.

If there is any trouble about the colour taking kindly to the paper, put two or three drops of liquid ox-gall in a teaspoonful of water, and with a clean brush wash it over the place. Let it dry or nearly dry, and then try your colour again; there will probably be no more difficulty. Sometimes it may be found more convenient to put a little ox-gall into the colour.

The same directions will serve for managing all the tints. When a leaf, letter, or ornament of any kind is to be shaded on a portion of its surface, it is generally best done with a pure transparent colour laid over the tint. Suppose it is a light blue ornament to be shaded on one side. After the first tint is dry, mix a little Cobalt or Ultramarine simply with water, and taking a small clean brush lay the shade on in a wash, rapidly, so as not to disturb the under colour. If it shows any tendency to spread on the tint, a very little gum water mixed with it will prevent that. If there are any stems straight enough to be ruled which have a dark side, rule them with the same colour in the mechanical pen. Short curved ones do with a fine brush.

The very fine white lines, dots, and other ornamentation may be put on with either a pen or a brush, as you find most convenient to your hand. A very fine red sable brush is, however, best suited to the purpose, since it works the same whichever way it may be turned, and there is no danger of scratching up the under colour. The brush should be firm and capable of being brought to a perfect point, such as to permit the white to flow from it in a fine line as it is rapidly moved along in a nearly perpendicular position.

Mix a little Chinese White with pure water to a rather thinner consistency than that of the mixed tints, and with your brush filled, but not loaded, try first some of the dots. Just touch the point of your brush to the coloured surface, holding it almost upright: if the white works well it will leave a little round speck, which will remain crisp and sharp when it dries. Unless it does this it is not in the proper condition. Observe whether it seems too thick or too thin, and work it over with the palette knife accordingly. It may be necessary to do this several times. White is often very troublesome, but patience and thorough manipulation will make it yield at last, and when it really is fit the finest lines and dots will flow from the brush readily, producing the effect of delicate etching in white upon a ground of beautiful colour. Understand, nothing can be done by pressing the brush upon the surface. It must be moved about with lightness and freedom, the point of it merely touching, and the under colour will seize upon the white, absorbing the water from it instantly, and thus leaving the line firm and sharp. Add a drop of water at times to the white in the saucer to keep it in the same condition.

For ruling straight lines the white needs to be a little thinner than for the brush-work, but not much. See that your mechanical pen is perfectly clean, open it a little, and, dipping a brush in the white, fill the pen not more than a quarter of an inch deep. Regulate the pen to the thickness of the line desired, arrange your straight edge on the design, touch your pen at one end of the line, and if the white takes at once to the surface, draw it rapidly but lightly and firmly along to the other end. If the white does not flow do not bear on, but draw the brush through the pen, filling it anew, and try again. White requires constant care and coaxing, but, with proper exercise of patience, it can always be managed.

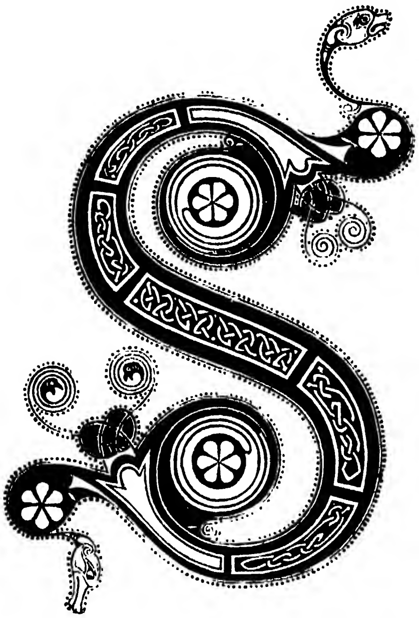


FIG. 142.—ANGLO-CELTIC INITIAL. FROM A MS. IN THE BRITISH MUSEUM.

VI. GOLD.

Gold works very much like white in some respects, but is not so troublesome on the whole. It must not be taken out of its saucer or shell and worked with the palette knife like white or colour, but you should have two brushes, a medium-sized one for grounds and a fine one for line finishing. These should be kept strictly for gold, that there may be no chance of muddying it with any colour, and there is no need of ever washing them. Only be careful to keep them with their points in good shape, and put them away just as you have used them. Much gold would otherwise be needlessly wasted.

To prepare the gold for use, in the first place put a few drops of water in the saucer with it, and let it soften a little; then with the larger brush gently mix it until it becomes of a fit consistency for use, which you will ascertain by trying a little. It should cover the paper instantly and solidly as the body colour does, and should be laid on in the same way. It must so cover the paper as to look like an absolute metallic surface, but should be no thicker than is necessary to that end. Being very heavy, it always falls to the bottom in the saucer, and must be stirred up thoroughly every time you fill the brush. The fine line finishing is done with the small brush after the same fashion as the white, and you will find it work more easily. All the directions given for ruling with white apply to gold, but gold has a great tendency to clog in the pen, which you will have to clean out and refill quite often.

Much of the best work of the old illuminators was finished throughout, after all the colours were properly laid on, with a firm, glossy black outline. This kept it all within the limitations of surface decoration, much as if it were precious inlaid work. It is a matter which will try your steadiness of hand and your patience more perhaps than any other portion of the work; but when well done it adds immensely to the clearness and efficiency of the illumination. Colours may sometimes look dull and hopeless

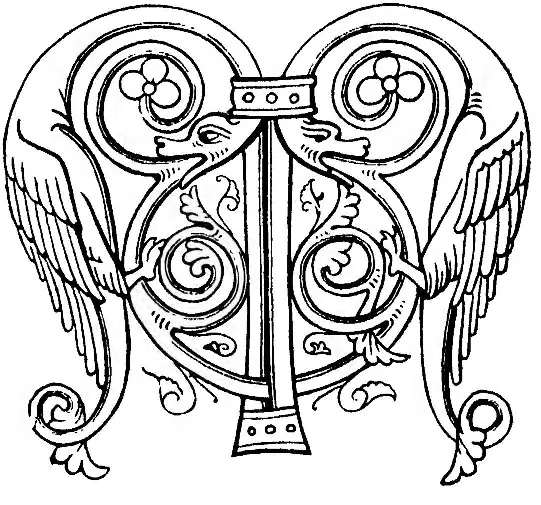


FIG. 143.—EARLY CELTIC INITIAL. FROM AN EARLY IRISH MS.

before this is done, which, as soon as they are separated and bounded by a firm black line, come out bright, clear and satisfactory. Should you determine on this black line, it is generally better to do it before the white line finishing.

In order to put this line on effectively, mix Indian Ink with a little Lamp Black, and your water so thick that it will just flow from the pen or brush. The line must be kept firm, black and regular. All perfectly straight lines should be done with the ruling pen and straight edge, and long lines of gentle curvature may be done with the same pen guided by the rubber curves, of which you will always find some portion applicable to every line.

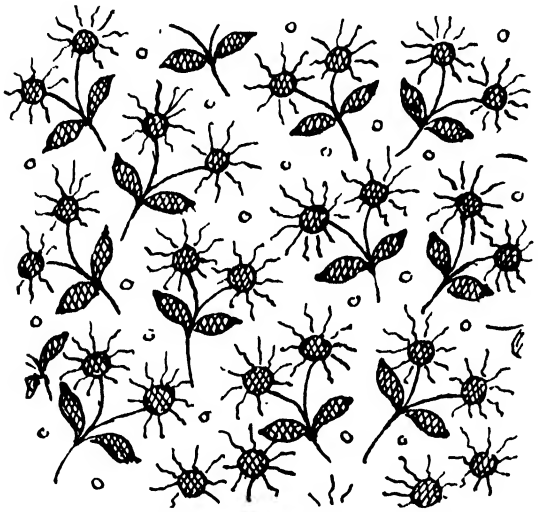


Fig. 144. Illumination Diaper. Gold Ground.

If any part of the gold is to be burnished, wait until it is perfectly dry after being laid on; then pass the burnisher over it, lightly at first, pressing harder as the polish begins to appear, and if you have properly covered the paper with the gold, you will be able to bring it to a beautiful lustre, and it will look like a plate of gold inlaid into the colour, with no suggestion of paper showing through it. Be careful not to rub the burnisher over any of the colours, as it will injure their appearance, and some of them are capable of scratching the burnisher, which you must preserve from all such danger. If there are any fine lines of gold upon the bare white surface to be burnished, do not bear on hard enough to glaze the paper.

VII. THE TEXT.

The first thing to be thought of in illumination, the real starting-point, is the matter to be decorated—the text. It seems curious that it should be necessary to say this, but experience shows that many think it a matter of little importance. Experience also shows that such thinkers are quite mistaken. In all the best work it is gravely and firmly set forth, so as to support and give value to its ornamentation. If it is merely a text of a few words, to be displayed on a wall, let all the letters except the colour be uniform in character and colour, and the colour subordinate to that of the more ornamental portions: not as we sometimes see where the effort is made to have everything alike gorgeous, where every part seems struggling for supremacy, and the result is naught. If it is an ordinary page, with a body of text consisting of many lines, nothing is so good and effective as a full, clear black. The letters should be legible and simple in form, and the whole solid and even from general uniformity of lines, whatever may be the style adopted. It should not straggle nor be in any way fantastic, but should be soberly arranged, so that its squareness and solidity may serve as a basis in which the ornament shall take root, and from which it may with security spread and flourish in all its luxuriance, branching forth in graceful curves and blossoming into beauty and sweetness of colour.

Lettering is an art in itself, requiring much practice to master. Long study is profitably bestowed upon it by those who make it their profession, and you need not be astonished or disappointed if you cannot succeed at once in what may seem to you a minor part of the work. If you do not find yourself able to do it well, it will be better that you should employ some one who makes it a business. Sometimes in a work of importance it is even well to have the text printed. You may be certain that unless it is well done it will entirely spoil the beauty of your design. The finest ornament would be vulgarised by slovenly text.

As regards the style of letter to be used, we would say that it is not essential that it should be what is called "Old English," or "Church Text," or "Black Letter." This last, when very well done, certainly seems to harmonise with illuminated work better than most other letter; but even ordinary written text, if it is kept close and black, like what is called "engrossing hand," for instance, is better than ill-understood, awkward imitation of mediæval text.

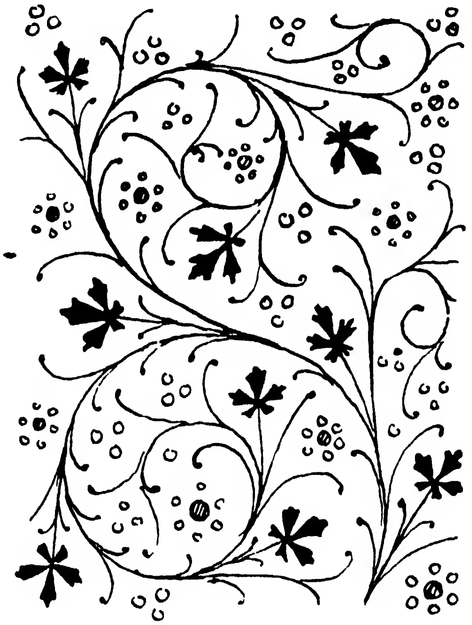


FIG. 145.—ILLUMINATION DIAPER. GOLD GROUND.

To sum up this part of the subject, let your text be legible, as aforesaid, and of such closeness and uniformity that it may furnish a sufficient body of black to give the page a square and substantial appearance.

VIII. GETTING TO WORK.

Having chosen the style of design and of lettering which you may prefer, proceed as follows:—Stretch on the drawing board a sheet of paper of proper size. Fix upon this the size of your whole design, and also the boundary of the text by lines drawn with the T-square; divide the latter space exactly for the lines of lettering. Sketch in the text, to show where the spaces must be left for the initials and ornament. Having all this established, go on and sketch the design as it may be supposed to exist in your mind. Begin with the main features—the principal forms—first, altering, moving and arranging the lines until they seem right, and gradually filling in the minor details; and continue altering, erasing, redrawing and arranging until the whole satisfies you. Do not fear labour in this part of your undertaking. Every designer has to do this, and in many cases more time is spent in these preliminary trials than in doing the work when it is finally settled upon and decided.

In this first drawing every important form at least should be made out accurately and truly, with a firm outline, so that no alteration will be necessary after it is transferred to the final surface, and that this may be kept pure and unfretted by erasures. There may be some small matters, such as diapers, which need not be drawn until you come to the finished work; but you should have them all fixed in your mind before you begin colouring. When you think you can do no more to improve your design, make your tracing,

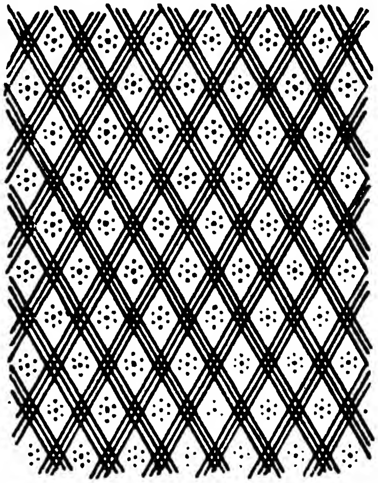


FIG. 146.—ILLUMINATION DIAPER.
Gold ground, ruled and dotted with the burnisher.

watching all the time for any opportunity to make a curve more graceful or to help the arrangement and balance of parts by slightly changing any of them.

Having your paper or board prepared for the final illumination, transfer and fix your drawing as has been already explained. Now complete the text before beginning to colour. This not only obviates the danger of spoiling any of your delicate work after it is done, but having the text, which cannot be modified, first fixed, you can fit the ornament to it more easily than would be possible by reversing the proceeding.

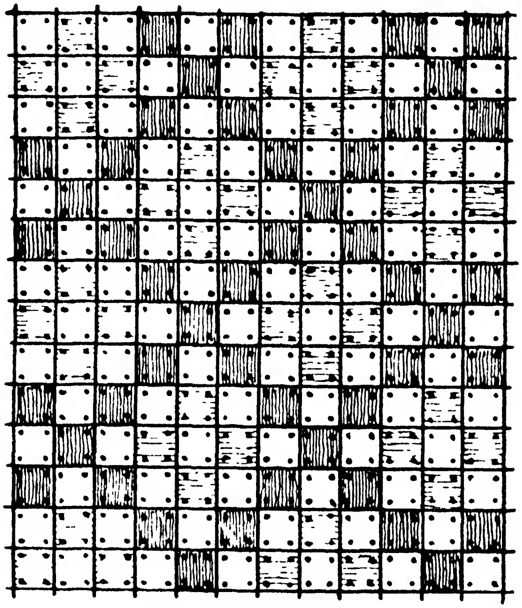


FIG. 147.—ILLUMINATION DIAPER.

The white squares are gold, the light-lined ones blue, the dark ones russet red.

Lettering.—For those who, without being familiar with the technical forms of lettering, still desire to do their own text, a few practical hints may here be given. Suppose it is the "Old English" style of letter which you are going to attempt, although the same plan will answer for any lettering. Having, as before said, fixed on your sketch the position of the lines of text, rule for each of them two pale ink lines for the height of the main body of the letters. Then with a hard pencil rule the whole space with fine perpendicular lines a quarter of an inch or so apart; these are simply to guide you in keeping the letters generally upright. Now go on and draw your letters with a soft pencil, attending first to the heavy up and down strokes, until you have a word sketched; then join these by the lighter lines to make the letters complete. Go on thus to the end of the line, keeping it as regular and uniform in spacing as you can. Sketch the whole page in this manner. Your lines will naturally come out of unequal lengths, since you cannot divide a word except on a syllable. Lay a piece of tracing paper over the sketch, and rule pencil lines on it for the boundary of the text, and also the horizontal lines for the lettering. On this you will bring your lines into uniformity by moving it backward and forward as you trace, making a little more or a little less space between the words, and, if necessary, making some of the letters themselves a little wider or narrower, until the lines are of equal length and the whole body of text as square and solid as a printed page.

This is supposing that it is ordinary reading matter prose—that you are doing. If it is verse, of course you are relieved from the necessity of making the lines all of a length; but you will go through the same process in order to get the letters and words uniform in spacing, and not to have any straggling or crowded parts. It seems a very laborious way of doing what appears to be a simple thing; but it is the best way, and it pays in the end. When you do your tracing on the final work, you have one more chance to adjust and regulate the spacing by the same method. In finishing the letters here it will be well to rule very faint horizontal pencil lines, to keep the letters uniform in height. For inking in, use Indian Ink rubbed up thick with a little Lamp Black, if it is not deep enough without. Slight rubbing with breadcrumb will then erase the guiding lines.

IX. BACKGROUNDS.

It is also generally better to put on any important masses or surfaces of gold before colouring, not only because it can then be more easily and safely burnished; but also because, in case you do not finish your work with a black outline, the colour can be laid more neatly and sharply to the gold than the gold to the colour. Should you desire a large gold ground with delicate line work like small leaves, stems, or tracery of any description upon it, there is supplied among other materials a very thin paper covered with gold leaf, the back of which, being gummed, may be attached to your paper in as broad surfaces as may be necessary, and the painting done upon it. There are many difficulties in working on it, and it is not recommended for illumination of the finest kind.

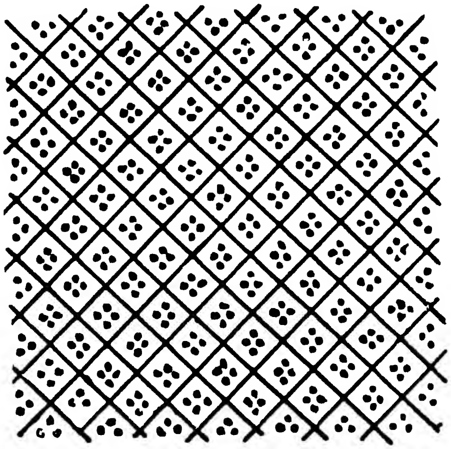


FIG. 148.—ILLUMINATION DIAPER.

Black ground, ruled with black and dotted with white, gold, or very light blue; or purple ground, ruled with crimson lake, and dotted with pink or scarlet.

As a general rule, let the ornaments appear lighter than the background, unless this latter is of gold. A gold background may be left plain and dead, or burnished; it may be enriched by bright lines, filigree work, or dots, by means of the burnisher; or it may be figured in the same style with Lemon Yellow. A dark green background may be enriched with the same kind of work in gold or in lighter green. A blue ground may have any enrichment painted on it in lighter blue. Let the light blue tend to a greenish rather than to a purplish hue. It may also be diapered with black lines, either in lozenges or in squares, laid horizontally or diagonally, with dots or flowers in the centres, either white or light blue. A purple or russet-red ground may be diapered with lines of Crimson Lake and dotted with Scarlet.

Diapers.—The term Diaper as used in decoration means any repeating, geometrically arranged, "all over" pattern. Diapers are innumerable in their variety. They may be of one colour, or of one colour and gold, or of two colours and gold, as a groundwork for the ruled lines; but they must always be so designed as to form, size, and colour, as to allow the ornament in front of them to appear distinctly, not being lost or muddled in the work behind it. A few forms are here given to serve as examples of what may be done.

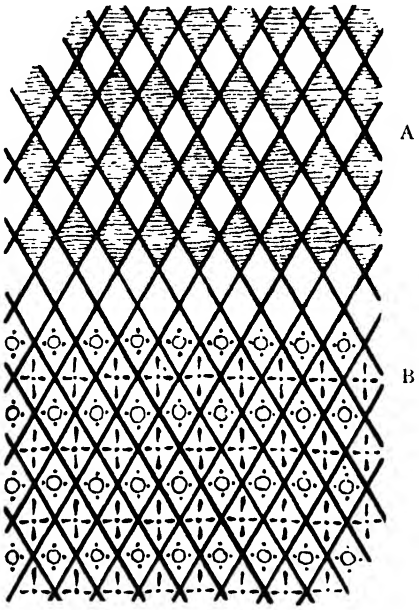


FIG. 149. ILLUMINATION DIAPER.

Gold and dark blue lozenges; the gold with rings and dots made bright with the point of the burnisher, and the blue with a white flower or cross; the whole ruled with black.

The diaper A, fig. 149, may be made with alternate light blue (Cobalt and White) and white lozenges, and the lines ruled broadly with gold; or it may be of a little darker blue alternated with gold, and ruled with black. B is made

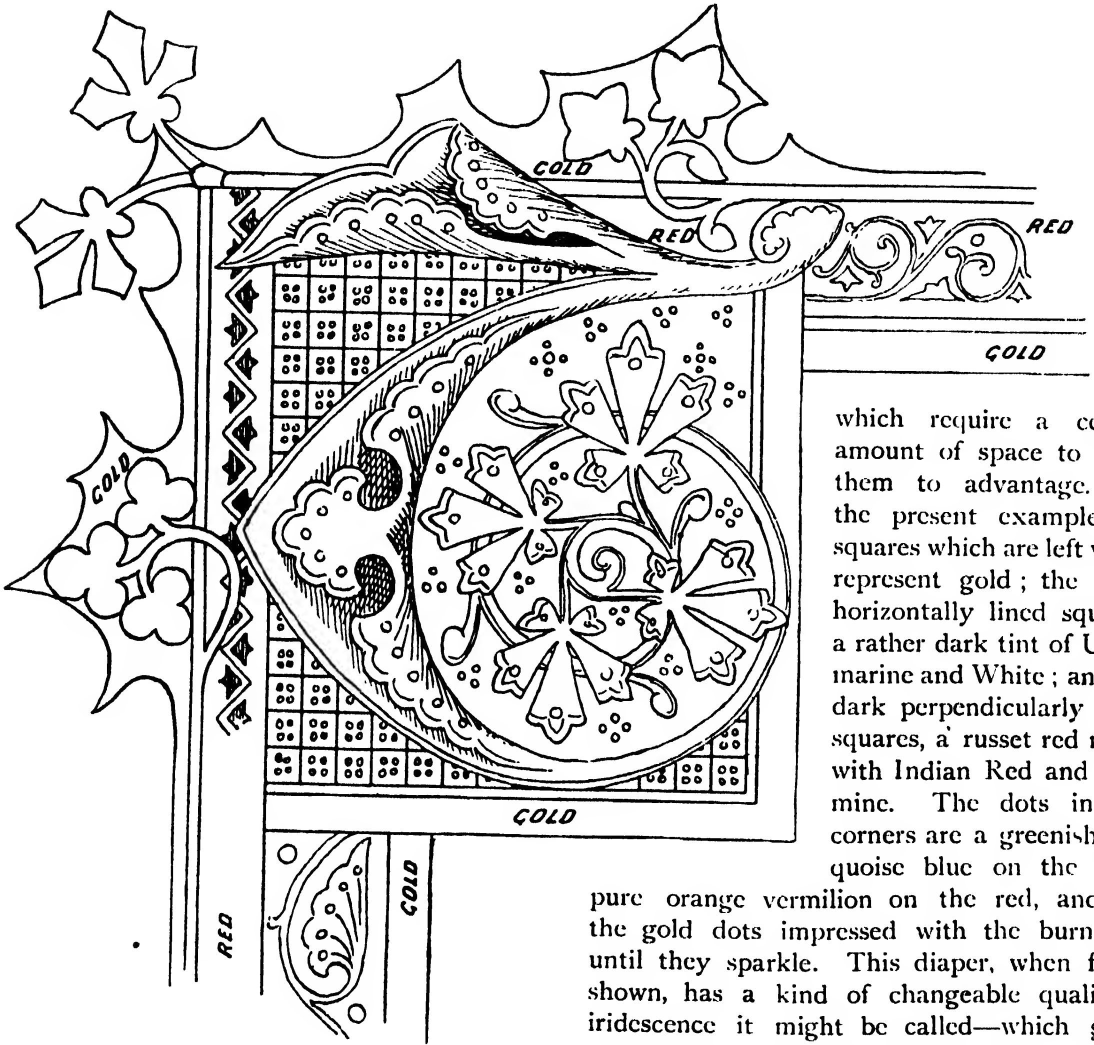


FIG. 150.—ILLUMINATED INITIAL. (See opposite page).

with gold and dark blue lozenges, the gold with rings and dots made bright with the point of the burnisher, and the blue with a white flower or cross, the whole ruled with black.

Fig. 144 may be entirely blue ground, ruled with black and dotted with white, gold, or very light blue; or purple ground, ruled with Crimson Lake and dotted with pink or Scarlet.

Fig. 142 is intended for a gold ground, ruled and dotted with the burnisher, but may be of varied colours like the others.

Fig. 143 represents a peculiar class of diapers, which require a certain amount of space to show them to advantage. In the present example the squares which are left white represent gold; the light, horizontally lined squares, a rather dark tint of Ultramarine and White; and the dark perpendicularly lined squares, a russet red made with Indian Red and Carmine. The dots in the corners are a greenish turquoise blue on the blue, pure orange vermilion on the red, and on the gold dots impressed with the burnisher until they sparkle. This diaper, when fairly shown, has a kind of changeable quality—iridescence it might be called—which gives great value to the more boldly-coloured ornament which may come in front of it. When you use a diaper of this kind there must be open space enough to show it, so that the eye may readily perceive the whole pattern, and that the varying colours may have their due effect.

Figs. 150 and 151 are primarily intended for gold grounds figured with bright lines, although they may be executed in gold lines on any coloured ground, and also in a lighter tint of the same colour as the ground. The end to be sought in diapering or damascening of this kind is, that the ground shall be so closely and uniformly covered, that individual forms in it, although graceful in themselves, shall not be prominent, and that the whole shall form a rich background of fluctuating colour and light, to set forth the more important objects. Delicate but lively contrasts of this kind stand high among the charms of illumination, and to the cultivated taste give pleasure corresponding to that produced by atmospheric effects in a picture.

X. AN EXERCISE.

A principal source of brilliant effect is the contrast of softly shaded and graduated colour on the ornaments, with flat or regularly varied grounds. To exemplify, let us take a suppositious corner of a page with an initial. In this case we will suppose a light and cheerful effect to be desired. Take the initial T, on page 248. We wish the letter to be bright and clear, with plenty of strength to lead the text, but with no heaviness. We will make blue the prominent colour. Having the outlines drawn and the colour decided on, the background must be arranged to throw it up and make it effective. For the ground of the square diaper mix Orange Vermilion and Indian Red; lay it on flatly, and when it is dry rule the heavy square lining across it with Crimson Lake, made deep and glossy with gum water; then put the four dots in each square with Orange Vermilion. Paint the flat ground inside the letter with a warm purple, made of Crimson Lake and a little Ultramarine with White; put in the groups of dots with Orange Vermilion. If, in dotting, the colour does not come out brightly, add a very little white to give it body. Now put the gold on the square borders, and on the outside, holly-leaf-like edgings. Leave the narrow space between the background of the initial and its bordering of gold untouched—white paper. Paint the parts marked red with Vermilion and Orange Vermilion mixed, and put on the ornaments in white.

Now we come to the letter itself. Preserve an outline on tracing paper of the letter, with the ornament on its face. Mix with care a tint of Cobalt and White to what you think a

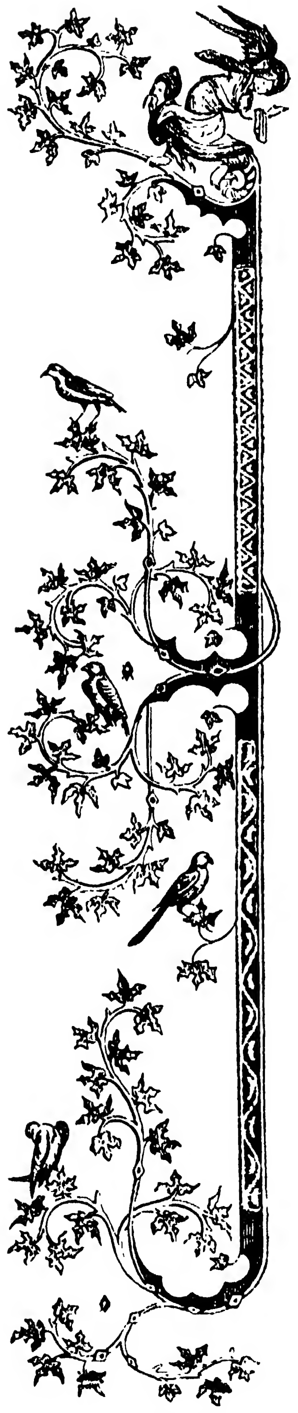


FIG. 151.—ILLUMINATED BORDER FROM A "BOOK OF HOURS" OF LOUIS OF FRANCE, DUKE OF ANJOU, 14TH CENTURY.

proper depth of colour, bearing in mind the modification it will receive from the darker colour and the white ornament on its surface. When you think it is right, paint with it the whole surface of the letter, carefully, solidly and evenly, following it round until it turns into a stem and runs behind the central leaves. Keep the same colour on the main stem and all its branches up to the leaves and buds; paint them with Orange Vermilion mixed with white, about half and half. Make all the edges of the colour sharp and clean, as if it were inlaid. When it is perfectly dry, trace on it the outlines of the folded-over, scallop-edged leaves; with a little pure Cobalt made into a wash outline them, and, with the same, delicately shade by washing the parts indicated by the light hatching. Wash the colour on rapidly and lightly, so as not to disturb the under colour; make the colour quite deep in the recesses, as indicated, and let it die away imperceptibly at the edges. You will observe how the shading also runs around part of the edge of the letter.

When this is neatly finished, take your fine white brush and make the lines which follow round within the edges of the letter and its scallops, and also the little rings, in sharp, clear white, working it as you were instructed when copying. Carry the line firmly around the stems, and ornament the scarlet leaves with lines and rings as suggested. Put a little Carmine in the central portions of the leaves and a little touch on each bud. Those parts of the design which have not been mentioned you may now paint in such colours as you think best fitted for the purpose; some portions, however, should be blue, to keep the letter from being isolated in colour—to help support it.

Whether or not you finish the whole with black outlines, you will find it well to rule all the straight lines which edge and divide the colours with a firm black line. This will give sharpness and clearness to the whole. The gold surface you may leave plain or ornament with burnished lines, dots, or filigree work of any kind. If you enrich the straight borders, keep a certain regularity in the figure. A zigzag line like that on the red border, with a circle or three dots in each angle, makes a very good enrichment.

Understand that all this is but a suggestion for the colours. It may be modified endlessly, and when you really get to work you will find a great difficulty in choosing among the multitude of beauties which will offer themselves to you; but consider always in making your choice what the effect on the whole design will be. Remember also that a number of isolated beauties will destroy the worth of each other. Decide on some one part which shall dominate the rest; keep it predominant, and if too many ideas occur to you, save some of them for the next piece of work.

XI. FINAL SUGGESTIONS.

Those long sweeping curves, almost straight when they start, gradually bending as they go on until they end with a whirl, which occur so frequently in that best period of illumination, when beauty of form was studied rather than the actual copying of nature, are suggested by some flower stems, the central ribs of many leaves, grasses, and the like. You will find beautiful and useful forms everywhere, if you understand how to subordinate them to your purpose. A design must not be all curves, no matter how beautiful they may be, or it will be weak and unsteady; neither should you multiply angular forms because they happen to be the prevailing style, or your design will be poor and starved in appearance.

A certain geometrical basis is necessary to all ornamental design, and the page of text happily furnishes this in illumination. Taking this as a starting point, keep the ornamental forms in such relation to it that no matter how freely they may branch out and spread about the page, it shall still serve as a fixed basis—a sort of centre of gravity to keep the whole firm and steady. So when you come to the details, remember that curves have a beauty added to them by being opposed to right lines and angles, and when you enrich a background, consider whether a geometrical or a filigree diaper will best suit the position.

Regarding the employment of natural objects in your work, your own taste and judgment must again be your chief guides. Pictures, if you desire to introduce them, can be enclosed in panels or frames, so as to keep them entirely separate from the ornament, but they would be much better somewhere else.

Figures of any kind, human or other, animals, birds, or insects, may be introduced at will anywhere in the work, provided there is not too much attempt at realistic treatment. They may be coloured as you please, but there should be no more realisation attempted than might be produced by a simple outline. Close imitation of nature will not harmonise with ornament, which must be purely conventional. It is the suggestion which is of value in illumination, and not the apparent reality, and as long as you keep within the limits of suggestiveness, you can make as much use as you please of such objects.

The old illuminator's work is full of quaint conceits, illustrated by figures, possible and impossible. Indeed, these figures very often run into mere grotesqueness, which has no fun in it for our generation, and certainly has no beauty. Do not suppose that you are called on to imitate these things. They are generally mere by-play, having nothing to do with the beauty of the ornament. If you wish to put any little playfulness into your design, let it be your own, or at least such as you can see the fun of and enjoy yourself. What you are to learn from the old workers is their manner of treatment in giving expression and not attempting pictorial effect.

The natural representation of flowers can only be successfully introduced under such limitations as have been prescribed for pictures —that is to say, that they be kept entirely separate from the ornament in some way— by a frame or otherwise: they are more beautiful by themselves, and illumination is more beautiful by itself.

To recapitulate some of the principal points which have been detailed in the course of these instructions:—

Fix upon your design and draw it, altering and correcting until it is satisfactory, before beginning upon that which is to be the completed work.

When you make a design, fix upon what shall be the main feature, and let the other parts of the work be subordinate to it.

Keep a due proportion between the different parts; do not let the text be overpowered by the ornament, nor the ornaments dwarfed or made feeble by their backgrounds.

Let your text be so solid and square in general effect that it may control and steady the flowing lines of the decoration.

Do not by any means try to make your ornament appear separated from the paper, but work always as if with the feeling that it is ingrained in it. Let your colours be flat, pure and firm at the edges, and this desired impression will follow.

When you prepare to lay on a body of flat colour, consider well what its effect will be when modified by adjacent colours, and by the white and colours laid on its surface

If, after your work is done any portion of the colours look dull and lifeless, a firm black outline separating them will frequently give them a brighter appearance, and it will add force to the design.

Keep your colours pure, and let no dust or dirt of any kind get into them.

PAINTING IN MINERAL COLOURS.

CHINA DECORATION.

I. INTRODUCTORY.—MATERIALS.

PAINTING on china is done with mineral colours. The china, after it leaves the hand of the decorator, is fired in a kiln in order to incorporate the colours with the glaze of the ware. Each of the colours (as sold ready for the use of the amateur) contains a certain proportion of flux, a mixture similar to the glaze in composition; the fluxed colours and the glaze fuse together in the kiln, and so render the decoration imperishable.

China decoration is peculiarly suited to the light hand of the woman artist. Not many years ago it was fashionable in England, but amateurs lost their interest in it through the difficulty of getting their work properly fired. The portable studio kiln (made either to burn charcoal or to connect with the ordinary domestic gas-burner) which is much used in the United States, has not yet been introduced into this country.

Any person who "can draw a little," and who knows a little about painting in water colours, may confidently take up china painting. Oil is used as a vehicle; but, apart from this, there is nothing in common between china painting and oil painting. There is much in common between china and water-colour painting. Oil painting is an opaque method, but china painting, like water-colour painting, is a transparent one. At least, it may be so treated. The liquid and transparent quality certainly is available to the china painter, who may have even an advantage over the water-colourist, if he will simply "float on" his pigment with a full brush; for while in water-colour the fresh, wet effect so obtained disappears when the paper dries, on china it may be retained even after the colour has been fired. How serviceable this quality may be made to the ceramic artist, particularly in the painting of flowers and in laying skies for landscape, every worker in water colours will understand.

Colours.—The Lacroix colours, put up in collapsible tubes, are the simplest for the use of the amateur. Out of the makers' long list, it will be found that the following colours are most generally useful:—

Reds.	
Rouge Capucine	Capucine Red.
Rouge Chair No. 1	Flesh Red No. 1.
Violet de Fer	Violet-of-Iron.
Brun Rouge Riche	Deep Red Brown.
Carmines and Purples.	
Carmine Foncé	Deep Carmine.
Pourpre Riche	Deep Purple.
Violet d'or Foncé	Deep Violet-of-Gold.
Violet.	
Blues.	
Bleu Ciel Azur	Sky Blue.
Bleu Riche	Deep Blue.
Vert Bleu Riche	Deep Blue Green.
Yellows.	
Jaune d'ivoire	Ivory Yellow.
Jaune Jonquille	Jonquil Yellow.
Jaune d'Argent	Silver Yellow.
Jaune Orangé	Orange Yellow.
Jaune pour mêler	Mixing Yellow.
Greens.	
Vert No. 5 Pré	Grass Green.
Vert Emeraude	Emerald Green.
Vert Pomme	Apple Green.
Vert Brun No. 6	Brown Green.
Blacks.	
Noir Corbeau	Crow Black.
Noir d'Iridium	Iridium Black.
Browns.	
Brun Foncé	Deep Brown.
Brun Sépia	Sepia.
Brun 108	Brown 108.
Grays.	
Gris Tendre	Light Gray.
Gris Noir	Black Gray.
White.	
Blanc Fixe	Permanent White.

"Fat" Oil of Turpentine—*i.e.*, oil of turpentine thickened by exposure to the atmosphere—is used in china painting to moisten the colours and as a medium or vehicle, just as oil is used in oil painting and water in water-colour painting. When the colour is to be used thickly, spirits of turpentine alone are required; fat oil is added when a thin coat of colour is required.

The tube colours are ready ground in oil. When powder colours are used, fat oil has to be added in all cases, but more is needed when the colours are to be used thinly than when they are to be used thickly. It is desirable to have small, wide-mouthed bottles for lavender, balsam of copaiba, and other mediums used, such as the brush may be dipped into quickly, for sometimes the difference of a few seconds of time may be a matter of importance to the decorator. Only a well-cleaned brush must ever be dipped into these fluids.

Dresden Thick Oil is the purest and most carefully prepared of the various thick and fat oils made from evaporated turpentine. It gives body to colours used in thin washes and helps to keep the colours moist.

Balsam of Copaiba should be light in colour and flow easily, which will show that it is fresh. If of a dark amber hue and heavy, it is old and will be unmanageable.

Oil of Cloves is generally preferred to lavender and similar oils because of its pleasant odour. It is valuable for preventing certain colours drying too quickly during manipulation. To use a china painter's expression, "it keeps the colour open." It has also the useful quality of not acting beyond the line where it is placed.

Oil of Lavender is similar to the above, and is valuable in setting touches of enamel where the free use of heavy oil is to be avoided.

Oil of Tar is very useful mixed with "raised paste," giving it a "stringing" quality very desirable in gold line relief work.

"*Raised Paste*" (a fine yellow powder mixed with oil to the consistency of paste) is laid with a brush upon china or glass. The parts of the design after they are fired are covered with gold; the ultimate effect being relief or embossing. (See p. 279.)

Relief White Enamel is a powder, which, moistened with oil and turpentine, is applied for relief effects, firing over the glaze of the china. It is semi-transparent and may be tinted any colour. Used with discretion, it is valuable in giving low-relief effects on laces, draperies, flowers, and foliage. It is excellent for "jewel" decoration, especially when used in connection with *German Relief White* (*Aufsetzweiss*,—*i.e.*, "sit-up white") which is sometimes sold for the same purpose. The latter is too thin, used alone, for jewelling, but *Aufsetzweiss* is an excellent relief white and is conveniently put up, moist, in tubes. It should be moistened with turpentine, rubbed smooth with a bone knife, and applied with a wooden point for high lights in fine work, and with a sweep of the brush for such lights in broad work (see RELIEF ENAMEL and JEWELS, pp. 283, 285).

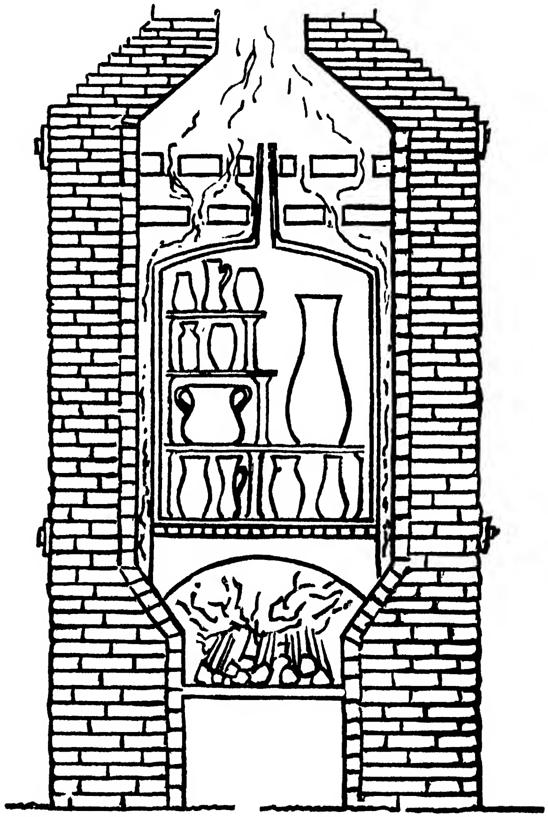


FIG. 152.—CHINA DECORATION. THE INSIDE OF A KILN. SHOWING THE METHOD OF STACKING AND FIRING CHINA.

The bricks which come in contact with the fire must be fire-bricks. The kiln must be bound with iron bands or bars to keep it from spreading. The fire must pass all around the box (made of fire-clay), and must be retained by two large fire-clay plaques with holes to prevent the heat from escaping too fast.

Flux is a material used to assist all colours and gold in fusing and permanently uniting with the glaze of the china. It is a composition of sand, borax, soda, and lead, which is almost identical with that of the glaze.

A Hand Rest (fig. 154) is especially valuable in figure painting. It is placed across the plate, or similar object to be decorated, to prevent soiling with the hand.

Tinting or *Grounding Oil* is a special preparation, used in laying grounds by the "dusting on" or dry method (see p. 260). A little Rose Madder (water colour, which disappears in the firing) is sometimes added to tint the oil, so that the varying hue of the oil ground may thereby show the parts unevenly laid and be the more easily "dabbed" into uniformity.

"*Dabbers*" are small, soft pads covered with silk or chamois skin. They are used in the tinting or grounding process to blend into uniformity the "tacky" colour laid on the surface of the china by the moist method (see p. 258).

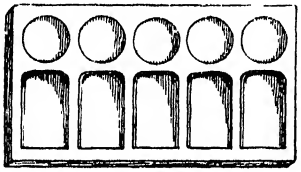


FIG. 153.—NEST OF "SLANTS" AND "WELLS."

Cotton Rags are used for cleaning the surface of the white china. Great care must be used to prevent particles of the "lint" settling on the moist colour. Most of such foreign matter will disappear when the china is fired, but particles of lint or dust may remain, doing much mischief.

A Curved Steel Scraper or dust knife has a needle set at the other end for picking out minor blemishes which cannot be removed with the dust knife (fig. 168).

The Glass Brush, made of fine threads of spun-glass, is used for scouring gold. It is held perpendicularly and applied with a gentle, even stroke until the required brilliancy is obtained. In scouring, it is well to protect the the hand with a leather or rubber glove, and to work over a large paper-box cover, so that all the fragments of the glass may be easily collected and thrown away.

Sand, also used in scouring gold, is ordinary fine sand carefully sifted; it is moistened with water.

Burnishers, for giving brilliancy to the fired gold decoration, are topped with agate or (the more expensive) bloodstone. The rounded hook kind is valuable, not only for hanging over the rims of cups and plates when finishing up the gold edges by burnishing, but for reaching under handles or other parts of the decorated article which are difficult to get at with the ordinary burnisher.

Brushes require especial care; they must be always in perfect condition. Buy the very best, and have plenty of them, so as to have a choice for any emergency.

Never lay a brush down charged with colour. Rinse it out in alcohol and roll it to a point on a soft cloth, folded and kept conveniently at hand. It takes but an instant to do this, and it soon becomes a fixed habit, performed unconsciously. The brush should also be often cleansed while in use. It should not be filled with colour more than two-thirds of its length. It is not necessary to keep a special brush for each colour. Properly used and cared for, a brush will always be in condition to go from one to another, even in flesh painting, which may be considered the most delicate work done on china.

For Flower Painting, choose a moderately long-haired brush with a good point. A No. 4 is small enough for all purposes; a larger size is better for general use.

For Flesh Painting your brush must have a fine point and be of strong, springy hair; a brush with a soft, cottony touch is worthless. It is advisable, sometimes, to cut away about one-third of the hair, perhaps more; this gives a long, clean pencil, with which you can work out the smallest detail.

For Gilding very fine work, some china painters use an extra long-haired red sable, called a "rigger"; see that it has a good point. For laying in large work, such as a head, a landscape, flowers, or birds, or any large work, the short-haired, thick "fitch" brushes are best.

China for Decorating should be carefully tested by the buyer. The piece should first be tapped lightly to find if it ring true and is not cracked, because, in the latter case, it would fly apart when fired. The piece must have no black spots, and it must not be warped; it should be perfectly smooth and have no defects. The colour should be white, neither yellowish nor rosy; for although usually ivory-white porcelain is employed, for amateurs the milk-white is preferable. The edges of the pieces should be even, and not show any places where the glaze is wanting.

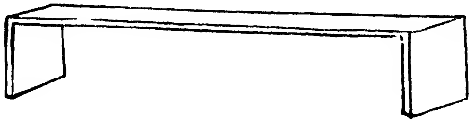


Fig. 154.—Hand-rest for China and Glass Painters (3 inches wide by 15 inches long.)

Colours that will mix.—Much nonsense is still written about the difficulties of china painting because certain colours "will not mix." The pith of the matter may be briefly stated as follows:—Yellows mix with all the colours, excepting the purples and Violet-of-iron; they are seldom used with blues. Greens are all rather crude, and need to be modified. Browns, yellows, carmines, grays, or black can be used for that purpose.

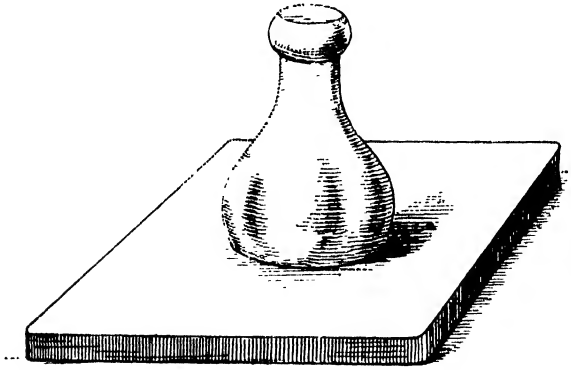


Fig. 155.—Muller and Ground-glass Slab for Grinding Colours, Raised Paste, and Enamels.

Reds and carnations mix freely with all the yellows, excepting Mixing Yellow, with the browns, blacks, and purples.

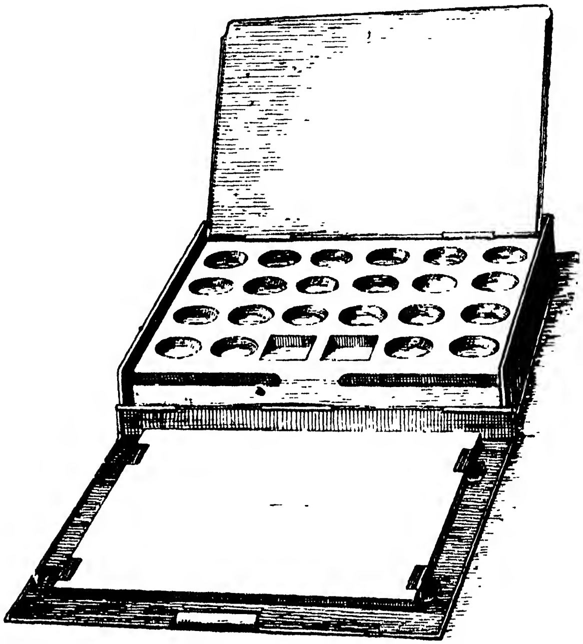


Fig. 156.—China Decoration. Porcelain Palette in a Tin Box, with a Ground-glass Slab (for Grinding Colours) attached to the Lid.

The carmines mix with every colour excepting Mixing Yellow.

Blues combine with the carmines and purples to produce every shade of lilac and violet. A *little* black is sometimes added for very deep tones. Browns are very useful. When used on Yellow they should have a little purple mixed with them.

Yellow, carmine, and green will produce grays of different tones.

With the exception of those named, all mineral colours may be mixed as freely to produce desired effects as if they were oil or water colours. Of course only experience will teach the right proportions to use of each.

A Test Tile, to show how the colours in your box fire separately and in combination, is invaluable. Figure 156 shows a convenient way of arranging the colours. As far as possible those selected for any one test tile should be such as will stand variations of heat. Rose colours, being the most difficult to fire, need careful study. It is desirable that your testing experiments be made in the kiln where the firing of your finished work is likely to be done.

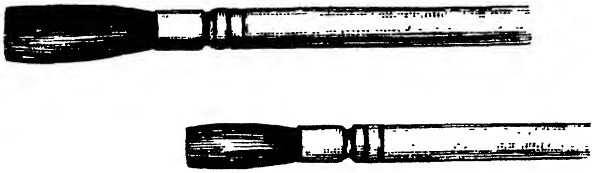


FIG. 157.—"SQUARE SHADERS," USED FOR CHINA PAINTING.

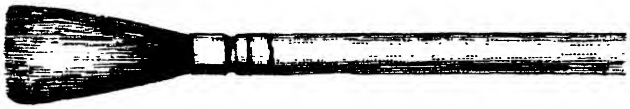


FIG. 158.—BRUSH USED FOR PAINTING GROUNDS ON CHINA.

II. GILDING.

Gold, chemically pure, is sold in powder by the pennyweight. It may be bought either fluxed or unfluxed (see p. 253); if the latter, about a third of its bulk of French flux is added.

To prepare the Powder Gold for use, enough thick oil is added to bind together all the particles in a fluid mass about as thick as ordinary cream. It may be thinned with turpentine *ad libitum*. Grind for an hour—more or less—until all the particles seem thoroughly incorporated. Keep the mixed gold on a china palette or tile. In removing the gold from the palette on which it has been ground, a clean, flexible steel knife may be used if desired, but never grind it with a steel knife. The grinding may be done with a glass muller in a shallow glass dish, if this is preferred to a flat palette.

The dry gold is preferred by many decorators, because it is likely to be purer than the gold that is usually put up, ready prepared, on glass slabs, in boxes. The latter kind, however, is much the more convenient for the amateur, who is apt to waste the precious powder gold in the grinding and mixing of it. He must be specially warned, by the way, against using ground glass as a palette for gold, for the rough surface will absorb and waste a great deal.

In buying a pennyweight of gold for the first time, it will seem ridiculously little for what you pay for it; but a pennyweight of gold will put solid gilding on the handles of a dozen after-dinner coffee cups, and a narrow line on the edge of each cup and saucer. Try to mix up only as much as is necessary for one painting. Less gold is required to gild six handles all at the same time than to mix it separately for each one. For six handles take one-third of a pennyweight. Be sure to wipe the palette off immediately before taking out the gold, so that it will be free from lint. Add two drops of fat oil and two of oil of tar; then stir the mixture in turpentine until it is perfectly smooth and of the same consistency as the colours. Three drops of fat oil, if very thick, and four of thin, may be used in place of the oil of tar, the odour of which is disagreeable to some persons. Oil of tar has the advantage, however, of making the gold spread more evenly on the surface. It also keeps it moist, so that it does not require constant turning with the knife.

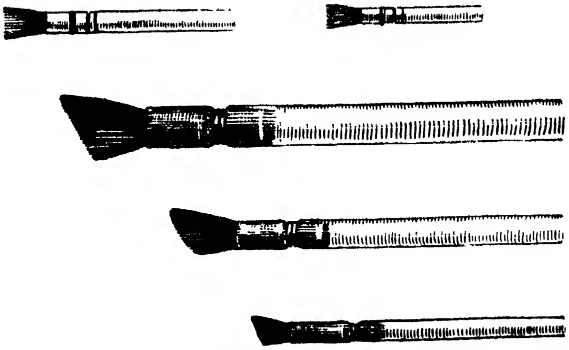


FIG. 159.—FITCH HAIR STIPPLERS USED FOR "TINTING" AND BLENDING; ALSO VALUABLE IN GOLD WORK FOR CLOUDED OR SPATTERING EFFECTS.

The Prepared Moist Gold.—Of the best kind, one moderately thick, even coat should be enough under ordinary circumstances. In using gold of a cheaper grade, two or even three coats may be necessary to give the requisite body. In such a case there is always the danger of it firing up in little scales and the gilding consequently requiring to be done again. The gold often becomes "fat" from being constantly mixed up and left standing, and it will not dry out. In this case it should be flooded with turpentine. The fat oil will rise in a moment and spread out to the edge of the slab. It should be wiped off with a rag free from colour. Very soon the gold will dry out, when it can be mixed up with turpentine, and it will then be ready to use again. Or, better still, have some gold in dry powder and add enough of it to absorb the fat oil.

FIG. 161.—TRACKERS, OR RIGGERS, FOR GOLD, RAISED PASTE, AND ENAMEL.

An entire package of moist gold should not be all rubbed down with turpentine at once, unless it is intended for handles or broad surfaces, which will use up in a short time.

The Coloured Golds for china painting are: red gold, brown gold, pure green gold, and green gold bronze. Silver and platinum are also used. All these may be bought prepared for use, or you may grind them for yourself. A third part ordinary yellow gold is often added to red gold to give it a copper tone and increase its lustre. A pale gold is made half of silver and half of yellow gold, and yellow gold may be beautifully tinted by a slight admixture (in the powder) of pure green gold. Golds of different colours are often used on one piece of work. As a rule, the coloured golds or bronzes are not burnished. They are either left quite dull, as they come from the kiln, or are slightly scoured with the glass brush.

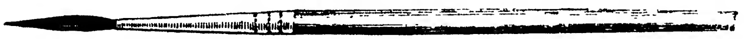


FIG. 164.—RED SABLE BRUSH, USED FOR LAYING RAISED PASTE FOR GOLD OR ENAMEL.

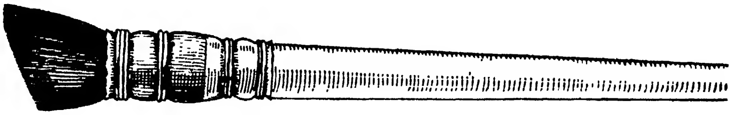


FIG. 160.—"DEERFOOT" BLENDER FOR STIPPLING AND "TINTING" LARGE SURFACES.

"**Liquid Bright Gold**" is a cheap fluid of dark brown colour, which on firing becomes brilliant and needs no further treatment. All other preparations of gold come from the kiln a brownish colour, and have to be rubbed with an agate or bloodstone burnisher. Liquid Bright Gold is harsh in colour. It is useful for lining cups or bowls and similar purposes, but it is unsuitable for finer decoration. It bears about the same relation to the pure gold preparations that "Dutch metal" bears to gold leaf.

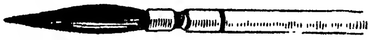


FIG. 162.—LONG PAINTING BRUSH.

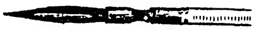


FIG. 163.—FOR MINIATURE PAINTING.

Gold over Colour, in washes as well as in tracery work, is often a desirable finish to a decoration. Unfluxed gold should be used for this purpose, for the reason that the colour under the gold contains flux; and fluxed gold laid over this would fuse too deeply into the colour, and, uniting with it, leave but little lustre. The secret of uniform success in firing gold over colour is a hard firing for the first time, to drive the colour deep into the glaze, and, after applying the gold, a less strong firing, so that the gold may not quite reach the colour but may incorporate with the upper portions of the glaze.

Burnishing.—The china when it comes back to you from the kiln will have a dirty brown look wherever the gold was put on ; but this soon disappears under the application of the agate burnisher, which must be rubbed gently and evenly over the gilded surfaces.

A less brilliant, or "mat" effect is obtained by scouring the gold with the glass brush (p. 254), or with scouring sand.

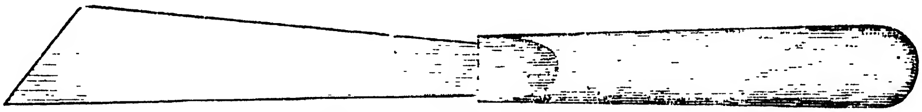


FIG. 165.—PALETTE KNIFE, WITH STEEL BLADE, FOR MIXING COLOURS.

Chasing is done with pointed pencil-shaped bloodstone burnishers.

III. FIRST EXERCISES : THE WASH—"GROUNDING."

The first exercise for the beginner should be the laying of a "wash" and the manipulation of it as a ground.

Squeeze from the tube a little colour- Red Brown will do—and thin it on the palette with equal parts of turpentine and copaiba. Fill a good-sized brush with the colour and spread it over a tile or circular plaque or plate as evenly as you can. Then, with the broad side of the brush, touch up the wash until it is so uniform that no one could tell how it was originally put on. This practice is preparatory to the next exercise:—

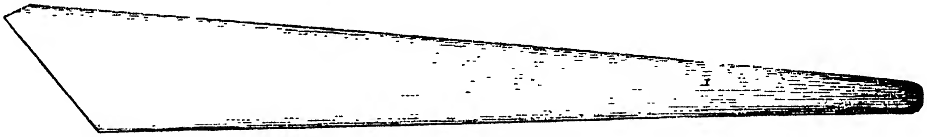


FIG. 166.—PALETTE KNIFE MADE OF HORN, FOR MIXING GOLD, ENAMELS, AND PASTE.

"Laying a Ground."—By this phrase is meant the covering of a given space of the china with a uniform or a graduated tint against which some subsequent decoration is to appear, or which may constitute the decoration in itself. There are two ways of laying a ground—the moist method and the dry method.

The Moist Tinted Ground is the kind generally used. For a surface the size of an ordinary tea-plate, squeeze upon the palette a portion of any desired colour about the size of a marrowfat pea. Add three drops of tinting oil, or balsam copaiba, or fat oil of turpentine, or, for a very delicate tint, simply oil of lavender. We give all these ways, but we prefer the first. Some decorators use rectified spirits of tar in small quantity, and thin with lavender oil, using no turpentine at all. The colour is thus kept "open" longer, but there is a disagreeable stickiness about the whole process. The tint will look very smooth, however, and this method may prove the easiest in the beginning.

Apple Green and the various yellows need no additional flux for tinting; but all other colours require one-third as much flux as colour.

Grind your colour, flux, and oil together, and add a few drops of turpentine. Have a "Deerfoot" blender, which is the "tinting brush," ready for use. It is held upright, its surface touching the china rather lightly. The motion is very much that of dabbing a baby's delicate cheek with powder. "Padding"—as the process is also called—is sometimes done with small wads of raw cotton tied up in square pieces of china silk, old cotton, or linen. The "Fitch-Hair Stippler," in the larger sizes, answers very well in place of the "Deerfoot" blender, which it closely resembles. (See pp. 256, 257.)

The colour, being properly mixed and well thinned with turpentine, should be laid on the china as quickly as possible with the grounding brush, a short quill-handled tool with a rounding end. You need not colour every particle of the surface in applying a tint with the grounding brush, but work quickly and lay the colour evenly; then, immediately, take the plate on the palm of your left hand, leaving the right hand free to use the tinting brush or the little cotton wad—the latter must not be too hard. Whether it be brush or wad that you use, it must be perfectly clean and dry, and it must be held upright and so used to *dab* the surface of the plate. Work in successive circles or rounds of touches from the outer edge of the plate to its centre, and when this point is reached go back to the edge and do it all over again. Repeat this process until the tint is perfectly smooth and uniform.

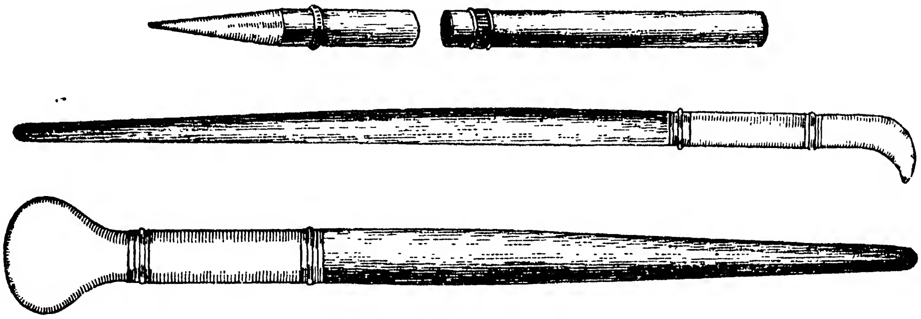


FIG. 167.—GOLD BURNISHERS.

The tops may be either agate or bloodstone. The lower burnisher is for large surfaces. (All the tools shown on the page are actual size.)

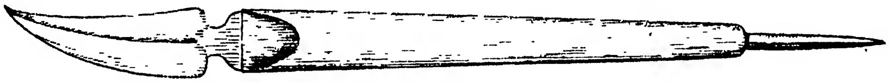


FIG. 168.—COMBINED DUST-KNIFE (FOR REMOVING SPECKS) AND ERASING PIN.

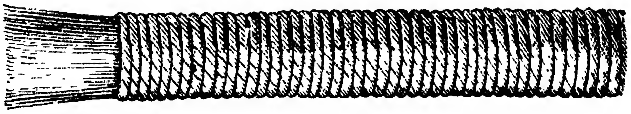


FIG. 169.—BRUSH OF SPUN-GLASS THREADS FOR SCOURING GOLD.

If you have added too much turpentine the tint will look very watery, and will begin to come off under the use of the blender. In this case wait a few minutes until the colour has begun to "set" or thicken a little, when you can generally complete the work with entire success. Delicate tints always have a watery look as the grounding brush lays them on; but it is the blending brush which informs you if they really are too thin, and in that case the white surface of the china will show.

Lavender oil may always be used to thin colour, either in tinting or in ordinary painting, but the incautious use of heavier oils will often cause the work to blister in firing.

The blending brush, if used too heavily, will take a tint completely off. The motion should be light but firm. In making the first round or two, do not stop too long to work over any one spot, but leave it till the next general round. As soon as the tint looks uniform and of a fine grain it is done. Then put the plate in a box or drawer away from the dust; the next day it will be dry enough to handle. It can be dried at once, if necessary, over the smokeless flame of an alcohol lamp.

The rims of plates may be evenly tinted (in laying on the colour with the brush draw the strokes toward the outer edge), and the white centre reserved for a design ; or a broad, tinted band may be thrown across quite one side of the centre, with flowers brought out on the larger half and stems on the smaller, as if coming from underneath.

Clouded Tinting.—A pretty effect may be produced by beginning with an intensely dark colour and vignetting to a white surface, whereon a design may appear. The design may stray into the tinting, provided its colours are darker and not antagonistic. If these are not the conditions, no touch must be carried over the ground colour.

For one experiment of this kind, we would suggest using first Ivory Black and Sepia, then the darkest greens, then Grass Green, then Apple Green, which vignettes beautifully into the white of the china. Do not mix any of these colours thoroughly, but let them cloud in as if by happy chance. The best effect is usually produced by beginning at the top of the piece to be decorated, with the dark colours, and coming down so as to approach white somewhere below the middle. If it is a vase, or some object whose greatest bulge is near the middle, the tinting may be repeated at the bottom, beginning there again with the dark colours. Where the upper and lower tints thus blend off on the white, there is a good chance for designs—sprays or vines, we will say. Any colours may be brought daintily into the Apple Green ; but, of course, with its complementary colours it will produce a neutral. Where this is apprehended, the green may be wiped away before the design is extended. Tips of sprays that run far into the green may be brought out beautifully with Violet-of-iron ; it will give the fresh, reddish look, peculiar to young growth.

Flat surfaces are much the easiest to tint. When tinting the outside of cups or objects of similar shapes, hold them upside down, and pass the brush toward the inverted top.

When designs are to be painted directly on tinted grounds, they may be drawn rather strong with Indian Ink, and, when dry, the tinting may be carried over or around, according to the size of the patterns. Then, as the tinting will not obliterate or conceal the design, any part of it may be wiped out when necessary. Be sure that no tinting is left, unless it is lighter than the colour to be applied and capable of uniting with it without injuring it.

Dry Tinting may be done by dusting powder colour evenly over a surface that has been prepared with the oil sold for this purpose (see page 254). The oil must be used sparingly in combination with spirits of turpentine, and be applied and dabbed evenly over, just as the moist tinting is ; when it has become "tacky," the powder colour is dusted on from a large blender. The dry method of applying grounds is best suited to dark colours. There are disadvantages in this method : one feels more or less uncertain of its results until after firing, and it is difficult to use a great deal of powder colour without inhaling enough to injure the health.

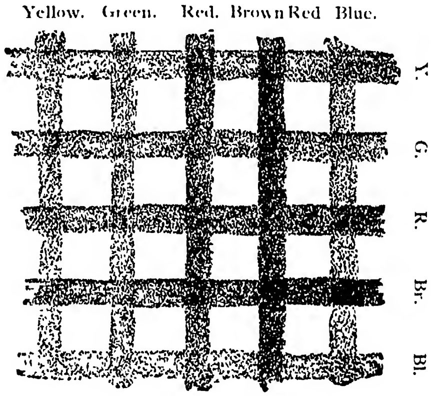


FIG. 170.—CHINA DECORATION. A TEST TILE ARRANGED FOR FIRING.

Graduated Backgrounds.—The following colour suggestions for graduated backgrounds no doubt will be found useful :—

Blue.—Light, Turquoise Blue ; medium, Deep Blue ; dark, Old Blue.

Green.—Light, Olive Green ; medium, Brown Green No. 6 ; dark, Dark Green No. 7.

Yellow.—Light, Jonquil Yellow; medium, Silver Yellow; dark, Orange Yellow.

Pink.—Light, Japan Rose; medium, Deep Purple.

Red.—Light, Carmelite; medium, Capucine Red; dark, Deep Red Brown.

Lavender.—Light, Lavender Blue; medium, Light Violet-of-gold; dark, Deep Violet-of-gold.

Brown.—Light, Yellow Ochre; medium, Sepia; dark, Brown No. 4.

IV. FLOWER PAINTING.

White Flowers.—One might imagine that white flowers could never be painted to advantage without a tinted ground to relieve them; but shade and leaves may be made to serve the purpose very effectively, and a beginner finds it much easier to work on pure white china. But white roses, lilies, and peonies are all very rich and effective on large objects with tinted grounds. Azaleas may be made very beautiful; their transparent delicacy admits of fine gradations of shade. Orange blossoms are opaque, but they are always handsome. To give their wax-like character, use thin Mixing Yellow, occasionally deepened with Jonquil Yellow. Sometimes flowers nominally white have enough colour to stand out from the surface of the pure white china without depending very much upon leaves and shadows. The tuberose is an example.

For highly finished china ornaments, it is sometimes desirable to touch the highest lights of flowers with Chinese White or Permanent White. A little may be taken on the point of a brush and laid with a single touch. It is best to reserve these lights for a second firing, when the temperature need not be so high, else they are liable to blister and cleave.

Yellow Flowers.—The most distinct tones of yellow are represented as follows:—Straw colour—Mixing Yellow; Chrome Yellow—two-thirds of Silver Yellow and one-third Jonquil Yellow; Golden Yellow—equal parts of Silver Yellow and Jonquil Yellow; Maize—equal parts of Ivory Yellow and Orange Yellow; Indian Yellow—equal parts of Jonquil Yellow and Ochre; Salmon—two-thirds of Ivory Yellow and one-third Flesh Red No. 2, and Deep Carmine.

For high lights in relief use either Chinese White or Permanent White, with an equal quantity of Mixing Yellow.

Shade yellow flowers with Brown Green; very warm touches may have Violet-of-iron.

Pink Flowers.—Use Carmines, shaded with the same. Purple may be used in deep shadows, and Apple Green in half-tints. The reflected lights need very light blues. Flowers of a very modest pink, like pale roses, require no other colours; but when there are warmer, deeper tones, mix a little Orange Yellow with the carmines, as previously directed.

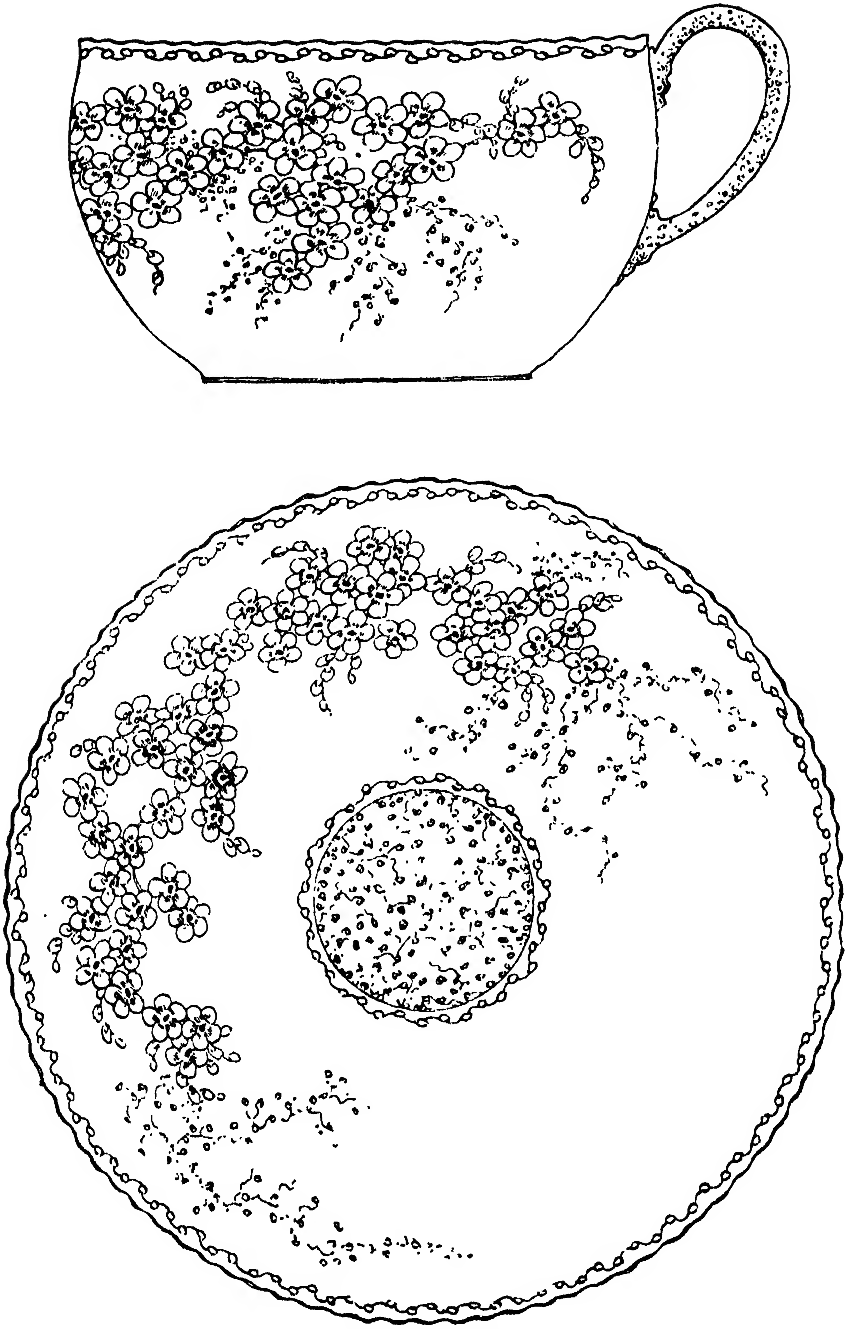
Crimson Flowers may be painted with Deep Carmine, with Deep Purple for the darkest parts.

Red Flowers, such as poppies, need Flesh Red, Capucine Red, and Deep Red Brown. Let the same colours shade the darker parts more heavily; then take Violet-of-iron and Ivory Black for the very deepest shades.

Violet and Purple Flowers have tints varying from Light and Deep Violet-of-gold to Deep Purple, with the addition of Carmine for the more garnet-like tones. Where a slight greenish and yellowish tint appears, as in the centre of the violet, use Apple Green and Mixing Yellow.

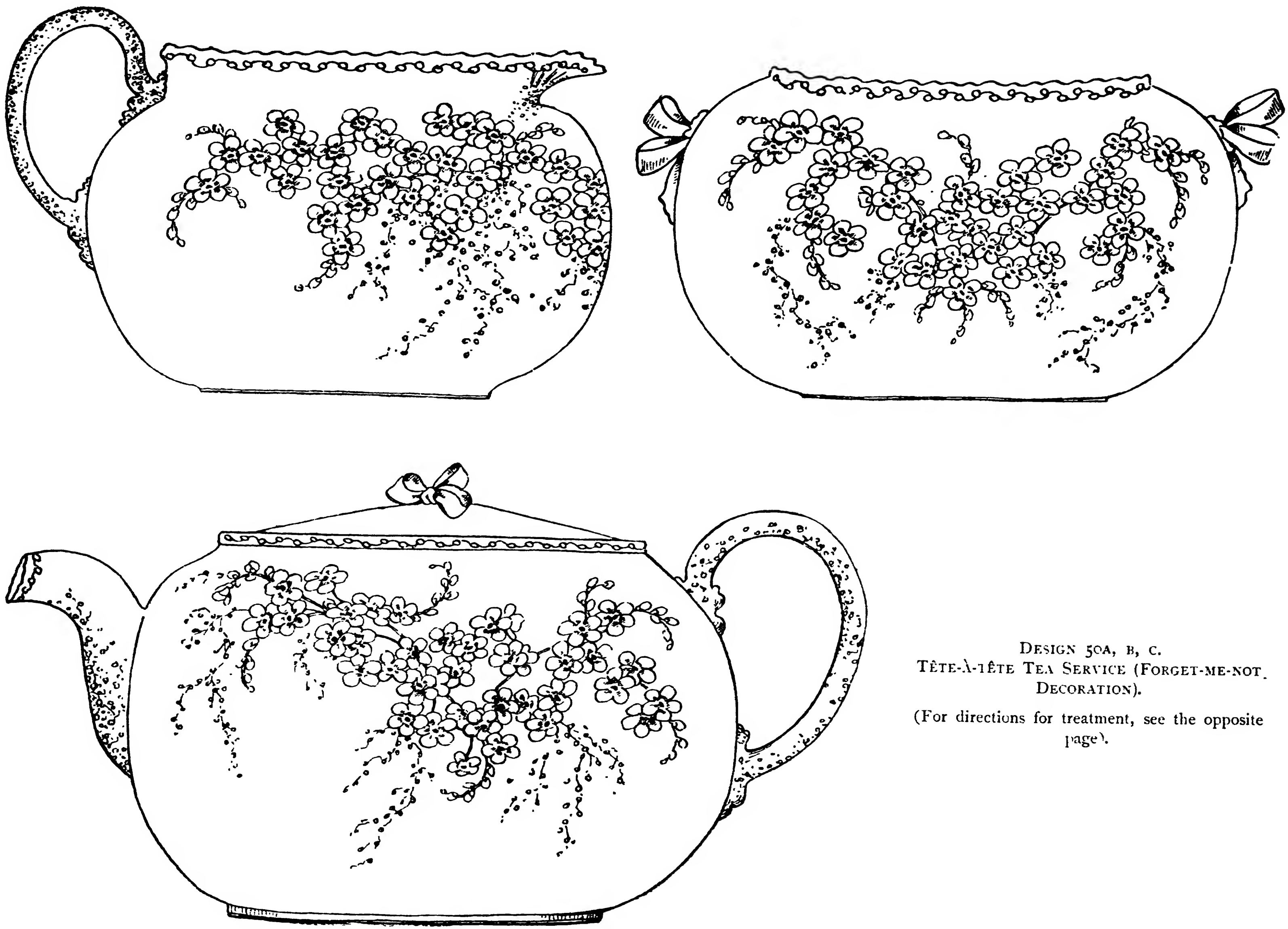
For early practice, the violet is a very desirable flower. Its petals can be thrown with a twirl of the brush that will usually give the desired gradation of shade. Trust to this rather than to subsequent shading. Violets want one or more of the blues in combination with the purplish tones. It may be the same with the convolvulus; even the brightest—Deep Blue Green—is not too decided for some of these. For the markings on the corolla use Carmine, Purple, or whatever may be indicated.

Pansies may require almost any and every colour, even black. This may be softened and warmed with the deepest reds or purple. For the tan-coloured varieties let Orange Yellow merge into Sepia. Be sure to keep the yellow



Design 50.—Tête-à-tête Tea Service (Forget-me-not Decoration).

For flowers and buds wash deep blue-green over the petals, reserving white of the china in the centre of each flower, in which put a dot of pink (Light Carmine). The buds are nearly white, pink tipped, and very delicate in colour. The vine-like tracery (as well as the line work around the edges) may be done in dull gold, or in the same blue as the flowers.

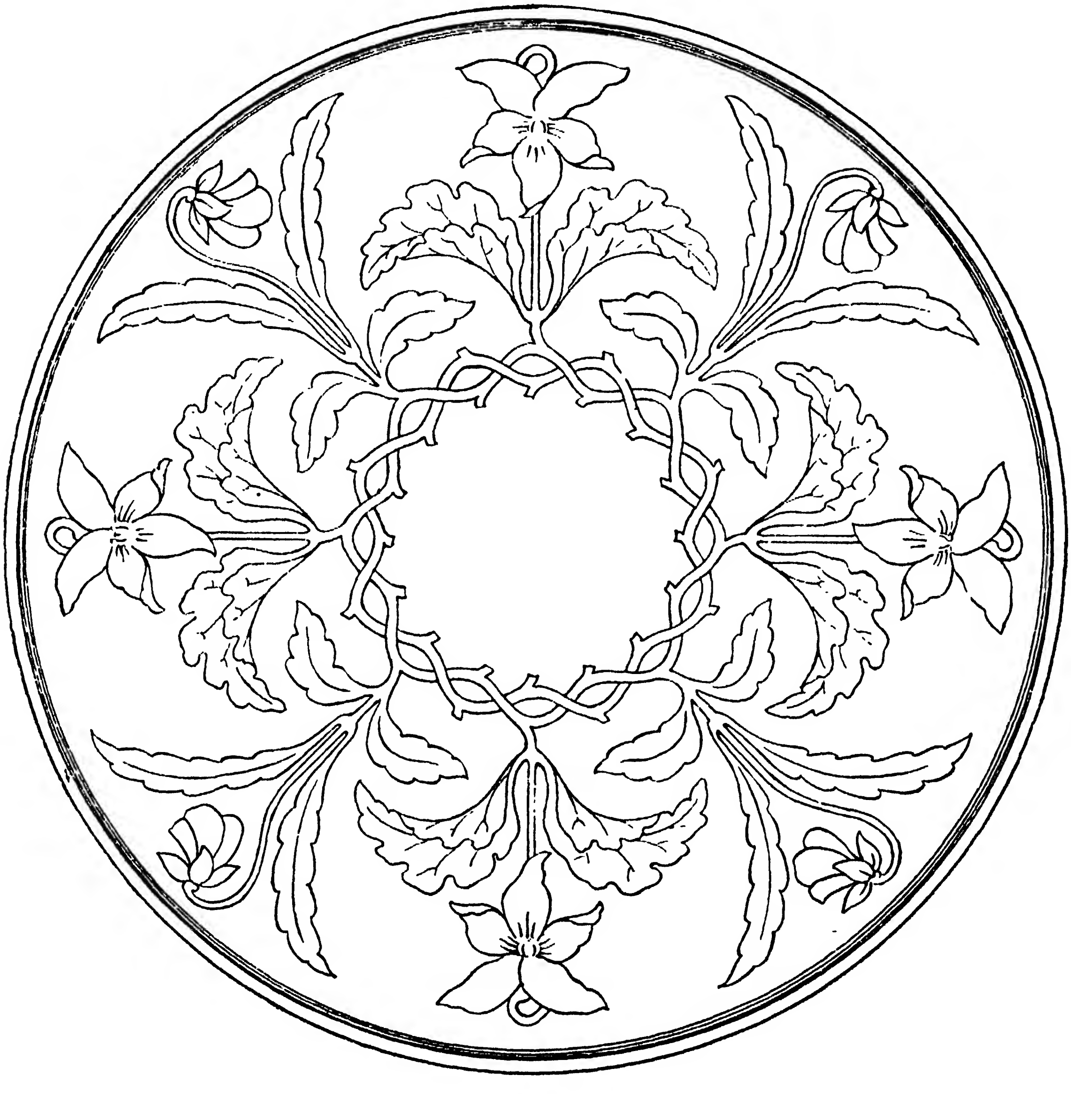


Design 50a, b, c.
Tête-à-tête Tea Service (Forget-me-not Decoration).

(For directions for treatment, see the opposite page).

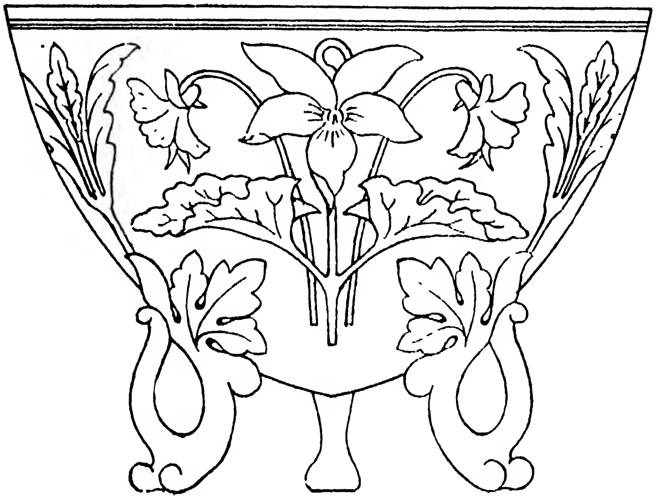
markings near the centres distinct from adjacent colours. A soft touch of black for the innermost centre, and a touch of pale Apple Green each side, completes the full-face view of the pansy.

What has been said about a few representative flowers will be sufficiently suggestive for any you may be tempted to try your skill on. If seed-vessels or berries are introduced be sure to give them convexity by sparing some light upon them; let the shade be soft and the local colour not too heavy. Small stems must be thrown in with quick, unerring touches; usually one slight line of shade must follow.

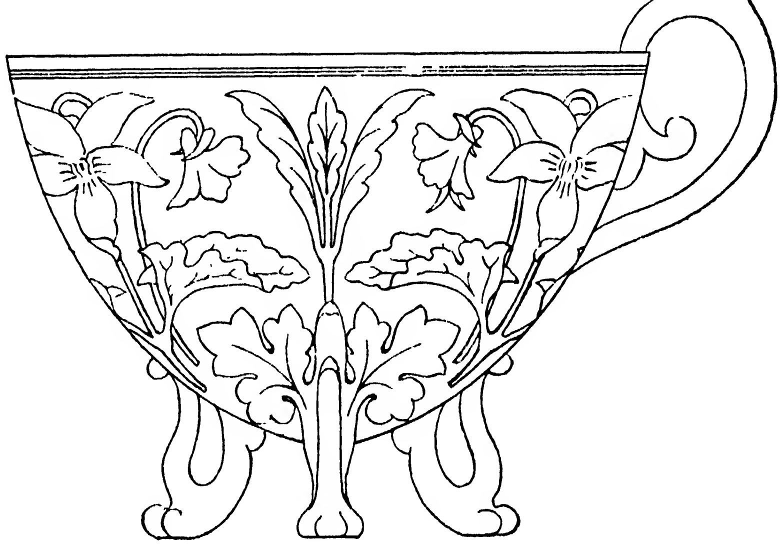


DESIGN 51.—SAUCER FOR THE CUP, SHOWN ON THE OPPOSITE PAGE.

Leaves.—Some are large enough to be tinted in as grounds are. There is the Begonia,—tinting and stippling will produce the most exquisite representations of some of the peculiarly rich varieties of this plant. In the leaves is a delicate Apple Green, softening into White, and also the brown and black greens, with plenty of Violet-of-iron. The hairy surface may be imitated by tapping the sharp point of an ivory stiletto on the partially dry colour; not on all parts of the leaves, but merely where the light makes the hairs especially apparent.



Design 51a. — China Decoration. Conventionalised Violet Decoration for a Cup. By W. J. Audsley. Both Sides are Shown.



The design may be carried out in raised gold against any rich-colour background "dusted on" (see p. 260). First sketch in the design with Indian Ink (water colour); then dust on the background, wiping out the parts of the design enclosed by the outlines, leaving the china clean there. Follow the drawing of the leaves and flowers with raised paste lines, covering them afterwards solidly with gold.

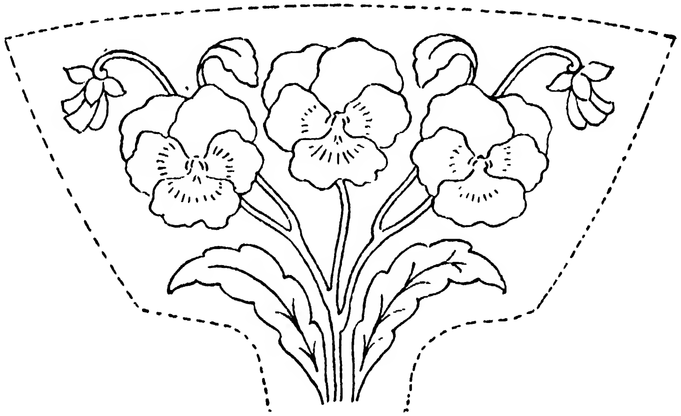
Autumn leaves look well on clouded grounds, as they may partake of almost any hue. Grasses are very useful accessories in flower painting on china. They must be thrown in with bold, skilful strokes. Little seedy tops may be sometimes put in effectively with side strokes from a rather dry brush.

The Pansy and Violet Cups and Saucers.—These designs, being conventional in treatment, may be painted in flat tints, which may be of the natural colours of the flowers, or harmonised to make a pleasing monochrome. For instance, a ground of Deep Purple and Warm Gray, with the decoration in a stronger tint of the purple, or Violet-of-gold, may be substituted for the purple; or use Deep Red Brown or Warm Gray for a tint, and put in the decoration in Deep Red Brown—not too strongly. Or you might use Chestnut Brown and Warm Gray, and work up with Chestnut

Brown; then add a little Deep Red Brown to the same for the outlines.

If the design is to be painted in colours, Light Ivory Yellow, or Turtle-Dove Gray would harmonise, with Violet-of-gold and Sky Blue for the flowers, and Brown Green and Pearl Gray for the leaves.

After the design is carefully drawn in with Carmine (water colour which fires out), if painting in monochrome, put on the tinting first; over the whole, and after the drying, lay in the design with the stronger colour in perfectly flat washes, without disturbing the ground underneath. If the flowers are put in in natural colours, the ground tint must be removed from the design, unless it be a delicate violet: in that case, it could be left over the whole surface.



DESIGN 52.—ALTERNATE (PANSY) DECORATION FOR CUP, PAGE 265 (CONVENTIONAL TREATMENT).

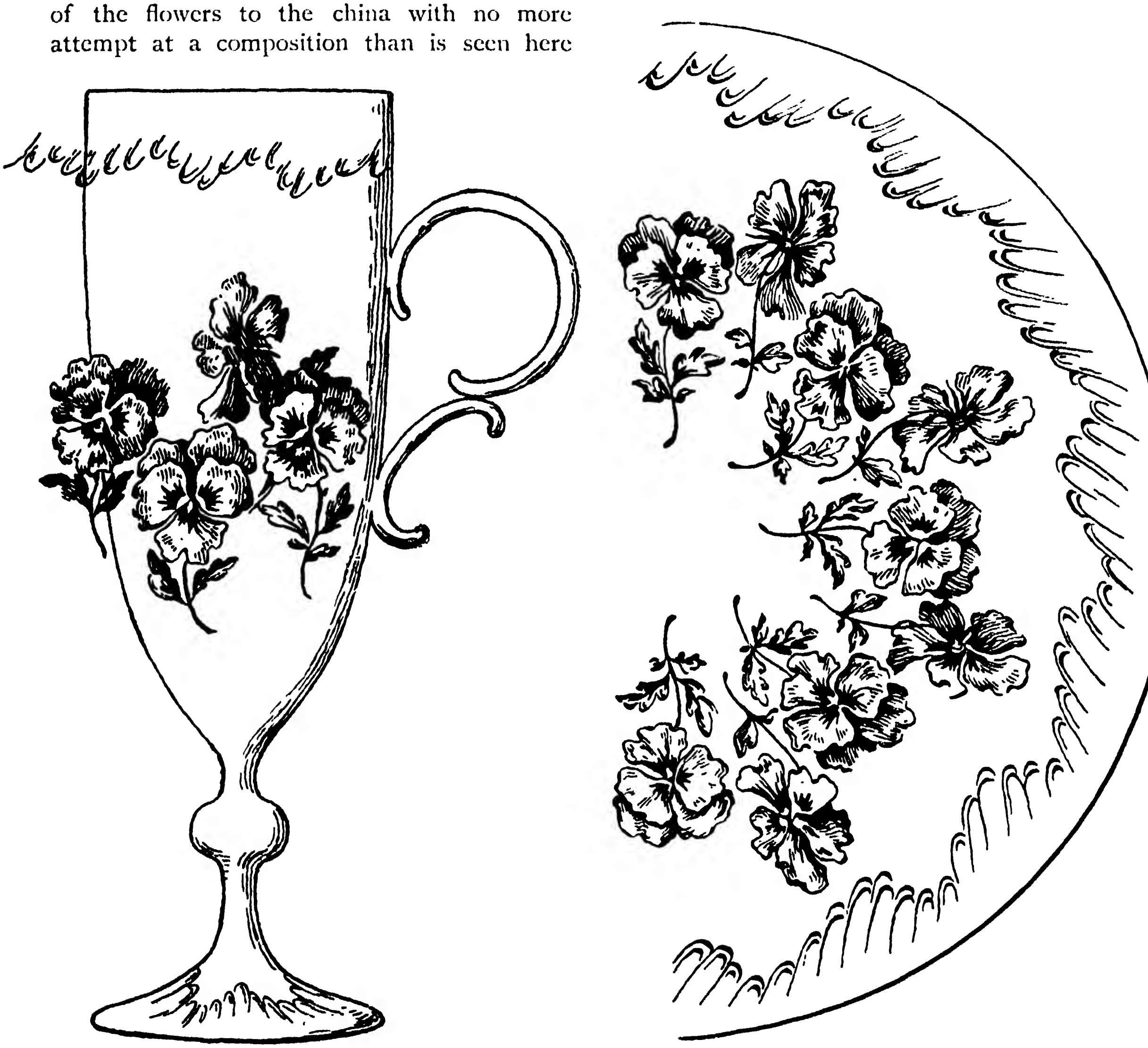
Roses.—The Catherine Mermet (see p. 79) is in colour the same as the La France and several other pink varieties. Use Carmine, and shade with Apple Green mixed with Carmine. Paint the leaves with Grass Green and a little Mixing Yellow, and shade with Brown Green, adding a little Carmine in the cooler tones. The red tips are touched in with Violet-of-iron. For the background use Pearl Gray.

Jacqueminot.—The nearest approach to the deep, rich crimson of the Jacqueminot rose is Ruby Purple, and as it is not safe to use this colour in heavy applications, the only way to obtain its full strength is by repeated washes. This may be done and fired frequently. Perhaps, by mixing either Carmine No. 1 or No. 2 with Ruby Purple for the first fire, and afterwards Ruby Purple alone, the best result may be obtained. This may be shaded with Deep Purple in the deepest accents. If a more brilliant tone is required, use either Carnation 1 or Deep Red Brown for the last firing. However, these are best left to individual judgment, as it is almost impossible to give proportions, and some leeway must be left for the amount of light and shade, perspective, etc.

Maréchal Niel Roses may be painted with Silver Yellow, shaded with tender, greenish gray. A touch of Carnation will be needed in the reflected lights, and possibly a little Yellow Brown. A good gray for these may be obtained with either Deep Blue Green and Orange—not Orange Yellow, however, that many mistake this colour for. It is a powder colour, and its name is simply Orange. It resembles a cool shade of Ochre, and produces a very satisfactory gray. Brown Green may be substituted, however, slightly modified.

The Pansy Decoration illustrated herewith, contrary to the treatment of the design shown on the opposite page, consists of a simple arrangement of the flowers as they might be seen in nature—or nearly so. The application of the flowers to the china with no more attempt at a composition than is seen here would not meet the approval of some critics; but it is a style that has the approval of many ceramic decorators of undoubted taste, and the result may be highly decorative if the colour treatment is made sufficiently conventional.

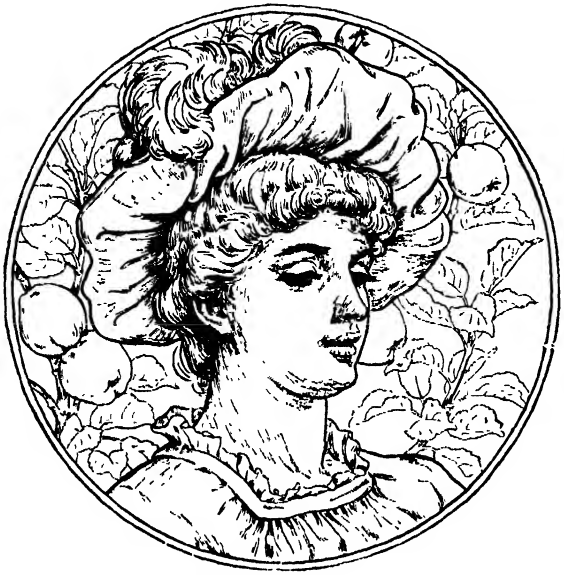
Various schemes of colour might be suggested for this design; indeed, as many as Nature suggests herself in these variegated flowers. A simple colour arrangement would be a tint of blue violet for the chocolate cup and saucer, leaving the centre white, the pansies being painted in soft blue, purple, violet, and pale yellow; or tint with Ivory White into deep cream at the edges. The relief ornament indicated in the design may be picked out with unfluxed gold, and let the flowers run to russets, bronze, and yellow reds.



Design 53.—Pansy Decoration of Chocolate Cup and Saucer (Natural Treatment).

almost impalpable powder—the powder made by scraping from a lead pencil will do.

Wash the surface of the china with turpentine, and when it is quite dry, fasten the tracing in the right position by means of little strips of gummed paper. Then carefully re-trace all previous lines. Too great care cannot be exercised at this stage, for the success of the subsequent work will depend largely upon the degree of accuracy with which this operation has been accomplished. If it has not been done with precision it will be difficult to correct it; sometimes the errors are irremediable, especially if undiscovered until after the firing.



Design 55.—Plaque Decoration, by Ellen Welby.

Background rather dull bluish green, the apple leaves rather blue green, and the spaces behind them a warmer, yellower green. Apples light, very yellowish green, with the red parts not at all bright. Hat rich, warm brown, the lights having a little orange and the shadows a little purple; feather dull yellow and orange. Dress creamy yellow. Complexion fair; hair light; eyes brown.

Upon removing the tracing paper, a perfect counterpart of the picture to be copied should be found beneath. The china will probably look "smudgy," but this is easily remedied by wiping it with a few drops of oil of lavender after the drawing has been secured.

The Ideal Head (design No. 54) will make an excellent subject. In monochrome it is advisable to retain the strong outlines shown in the engraving, for they aid in producing the proper decorative effect. Keep the background very light.

VI. FIGURE PAINTING IN FULL COLOUR.

The palette, set complete for figure subjects, includes the following colours:-

Chinese White.
Sky Blue.
Light Sky Blue.
Dark Blue.
Deep Ultramarine.
Victoria Blue.
Blue No. 29 (special for porcelain, scales on earthenware).
Brown No. 3.
Bitumen.
Brown No. 4 or 17
Yellow Brown.
Deep Red Brown.
Sepia
Light Carmine A.
Carmine No. 2.
Deep Carmine No. 3
Light Gray No. 1.
Gray No 2.
Neutral Gray.
Russet or Warm Gray.
Silver Yellow.
Permanent Yellow.
Ivory Yellow (47 of Sèvres).
Yellow for Mixing (41 of Sèvres).
Crimson Lake.
Raven Black.
Iridium Black.
Yellow Ochre.
Purple No 2.
Crimson Purple.
Deep Purple.
Capucine Red
Flesh No. 1.
Flesh No. 2.
Deep Flesh.
Orange Red.
Grass Green No. 5.
Brown Green No. 6.
Dark Green No. 7.
Deep Blue Green.
Deep Chrome Green.
Apple Green.
Sap Green.
Violet-of-iron.
Light Violet-of-gold.

The Ideal Head (design No. 54), given as a model for monochrome painting, may now be considered for treatment in full colour.

Begin by drawing or transferring the outlines of the head and shoulders on to the plaque in the manner already described (see p. 268). Put in the background first. For this mix Sky Blue, Ivory Black, and Mixing Yellow. Put the colour on smoothly, and dab it evenly over the surface, darkening the tone by adding more blue and black at the lower part of the plaque. A piece of soft cotton tied to the end of a stick makes an excellent dabber for such a background. Use plenty of oil, but not too much.

Paint the hair next. Use for this Mixing Yellow toned with a dull red, such as Flesh

Red, and shade with Sepia. The flesh is painted with Mixing Yellow, Flesh Red, and Sky Blue, in equal parts. Mix the colours carefully before applying them, and do not let the general tone be too dark. As there is very little shadow on the face, it will only be necessary to deepen the tint in certain places, such as around the eyes, nose and mouth, also under the chin. In the lips add more red. In the nostril also and in the ear more red will be needed. In the shadow under the chin a very little soft gray may be added, especially in the half-tint connecting the shadow with the cheek. The iris of the eye is put in with Sepia, and the pupil with Ivory Black.

In painting the neck, add a little more yellow than for the face.

It is not necessary to outline as clearly as is shown in the design when painting in full colour. This design calls for the minimum knowledge of drawing and modelling the human face, and it is free of any unnecessary accessories in costume or background. The head we give next (design No. 55) is much more decorative, and, correspondingly, more elaborate. The accompanying drawing, of course, will have to be enlarged to the required size.

Keep the whole of the background a rather dull bluish green, the apple leaves being rather blue green, and the spaces behind them filled in with a warmer, yellower green. The apples should not be very bright, most of them being a light, very yellow green, with some Carmine worked in for the red parts. The stems of the branches should be warm brown, with a little purple worked in. Make the hat rich warm brown, the lights having a little orange with them, the shadows being kept very dark, with a little purple introduced. The complexion is rather light, and the hair fair and of a rather warm tint. The eyes are brown, and much darker than the eyelashes. In the latter a good deal of gray should be used, or they will seem too hard. The feathers in the hat should be dull yellow and orange. The dress is a dull creamy yellow; the frill around the neck is white shaded with grays.

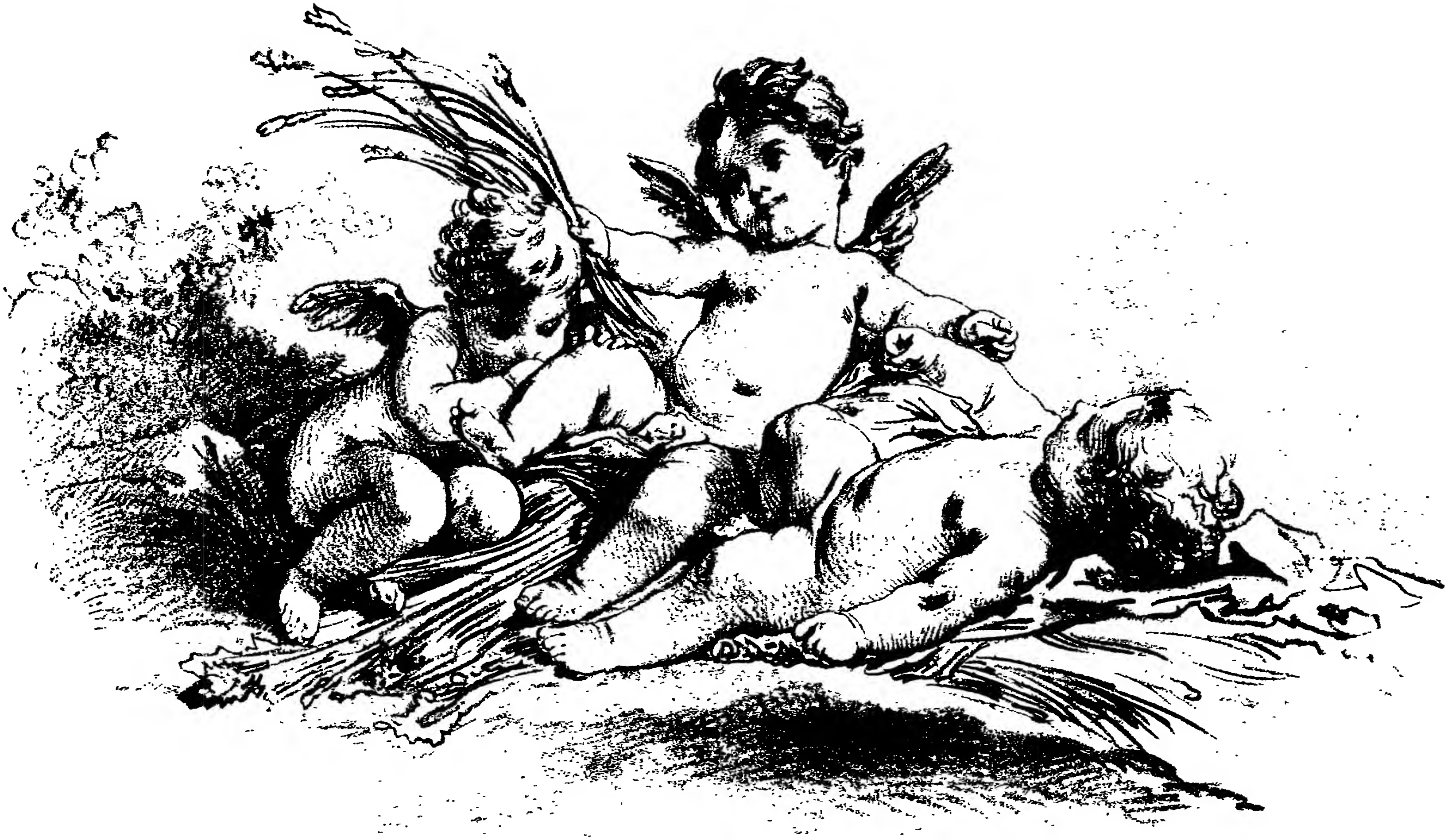
The skilful draughtsman and colourist will not restrict himself merely to head and bust. To the abilities of such a china painter the medallions (designs Nos. 38 and 39), after Angelica Kauffman, will afford the fullest scope, especially if he be skilled in miniature work. Except for miniature painting, the designs will need to be considerably enlarged. Lacroix colours may be used, except for the flesh, for which the Dresden colours are most suitable; or Dresden colours may be used throughout.

Pompadour Red, with rather less than a third Ivory Yellow, makes a good flesh tint. The simplest way, perhaps, would be to put the flesh tones in flat, and blend them with a stippling brush, after having first outlined the features and limbs very delicately with Pompadour Red. The flesh tint must be mixed with fat oil and a little tinting oil, to prevent it drying too quickly. Lay the tint on with a flat end brush. Yellow Brown and Chestnut Brown in Dresden colours are charming tones for golden and dark brown hair. For the blue drapery use Ultramarine Blue, with a very little Emerald Green in it; for the man's robe, Red Brown, with a little Purple No. 2; for the purple robe, Purple No. 2, with a little red. Shade the white dress with Neutral Gray. For the buff cloak, Yellow Brown and Sepia. For the sky, Ultramarine Blue and Emerald Green; shade with Neutral Gray for the clouds. Put the lyre in with matt gold.

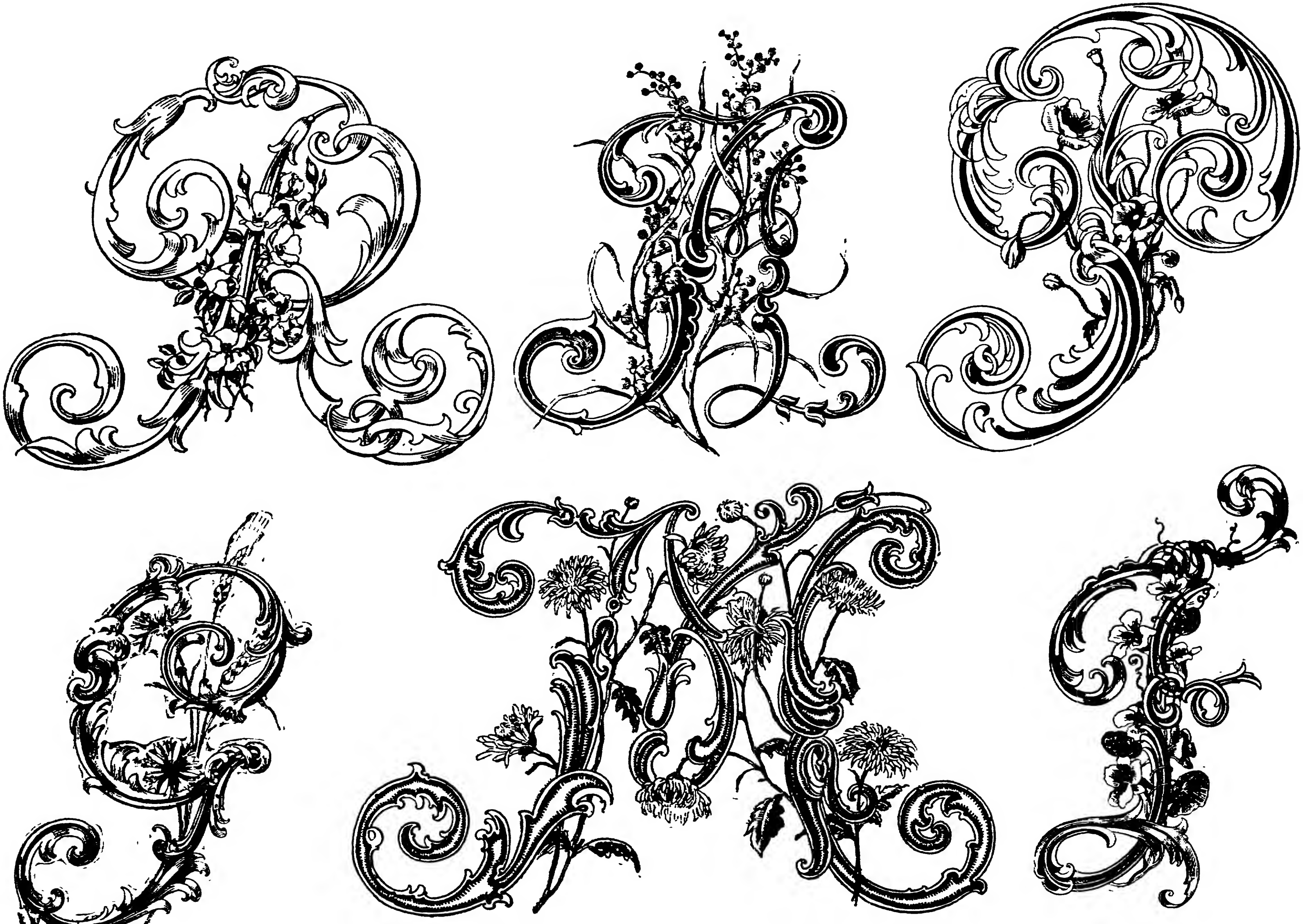
For the border lay a flat tint on the broad band with Ultramarine Blue and Neutral Gray, mixed with tinting oil and blended with a pouncer. When dry, scrape the tint off the design and paint it in matt gold. Make the outer border Dark Red Brown, and the design in gold for the rim burnished gold, the two inner circles Red Brown and gold. These designs will probably require two firings.

VII. CUPIDS IN BOUCHER STYLE.

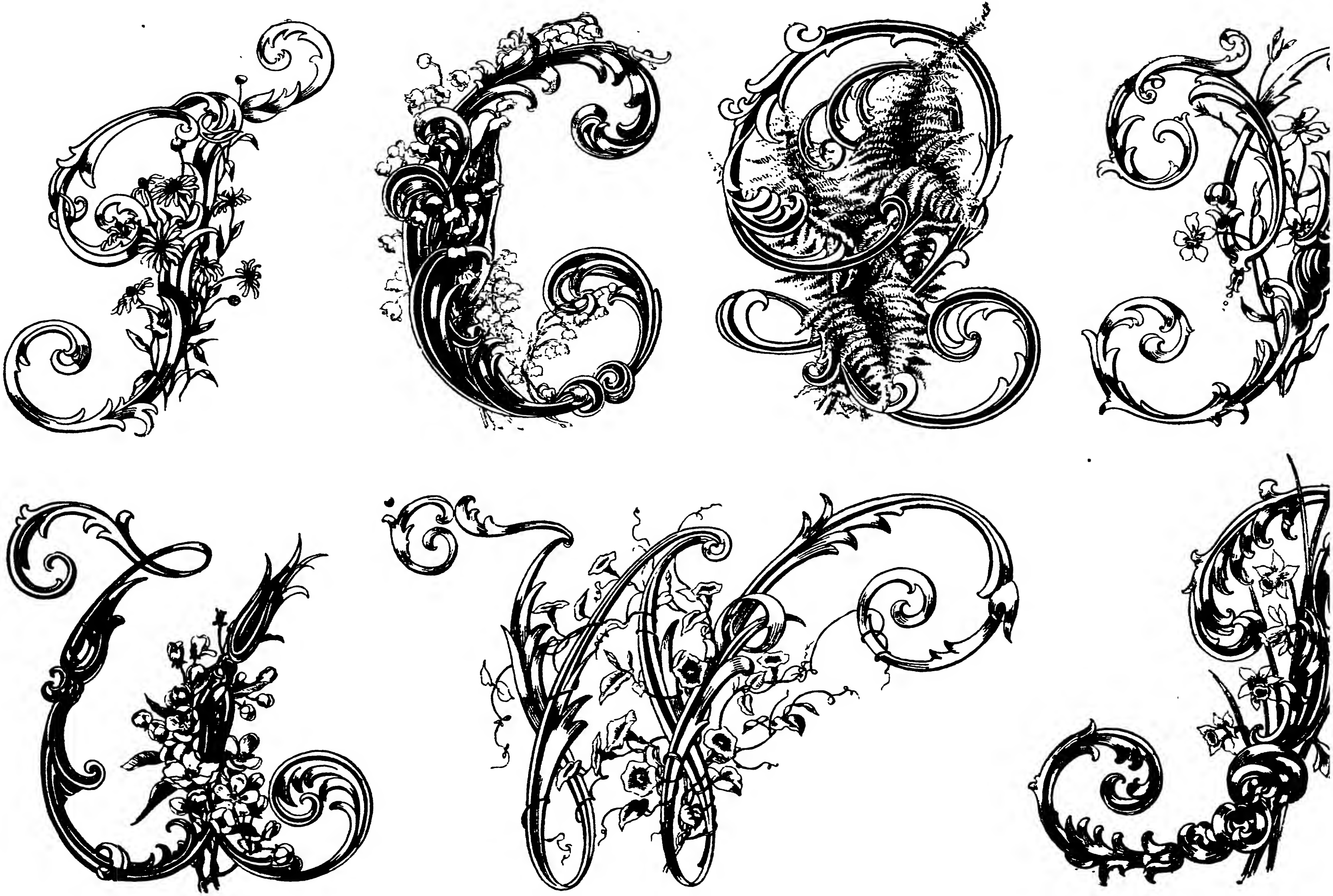
Use transparent water colour for sketching. Carmine is the most desirable except for the eyes and hair, for which delicate local colour may be used.



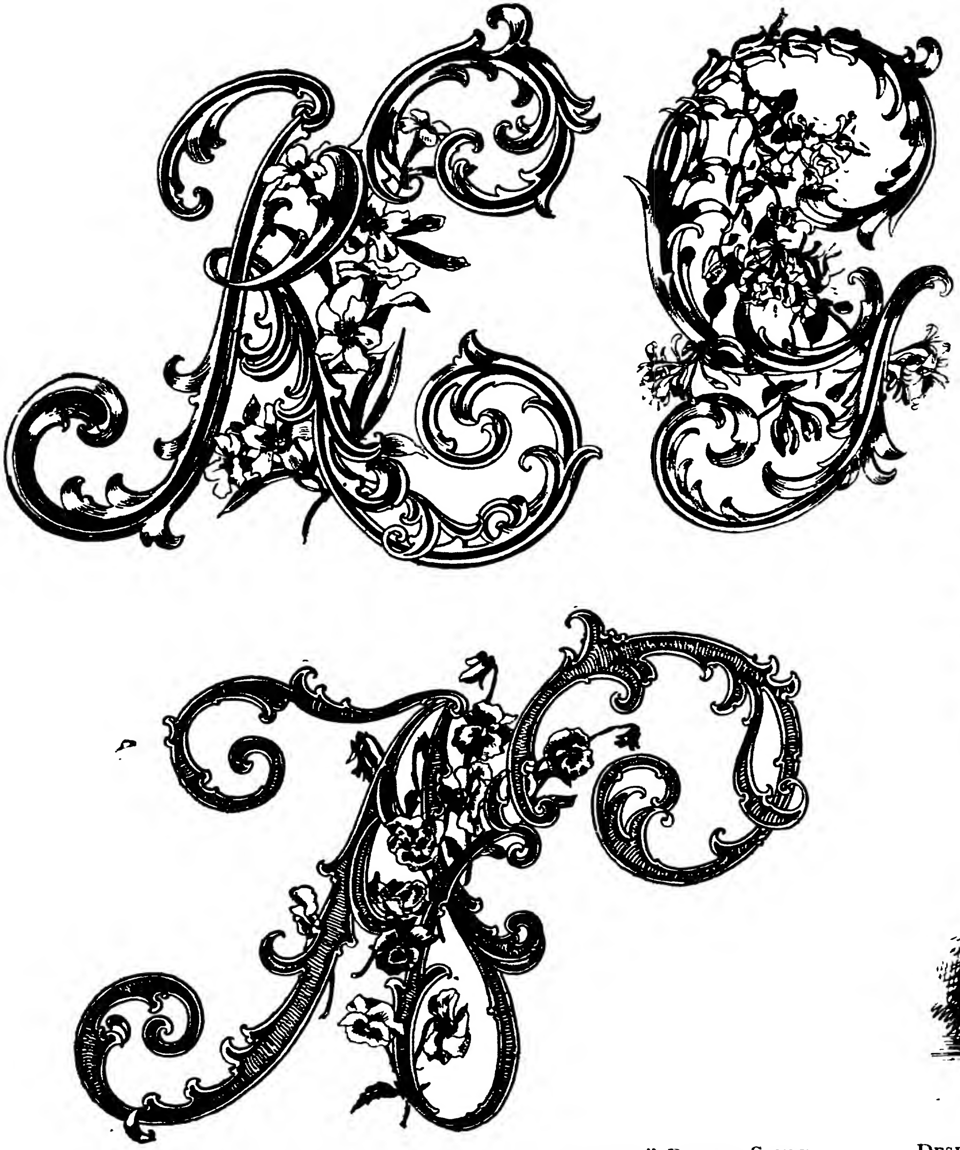
Design 56.—Composition by François Boucher. Suitable for Tapestry, Porcelain, and other Decorative Painting.



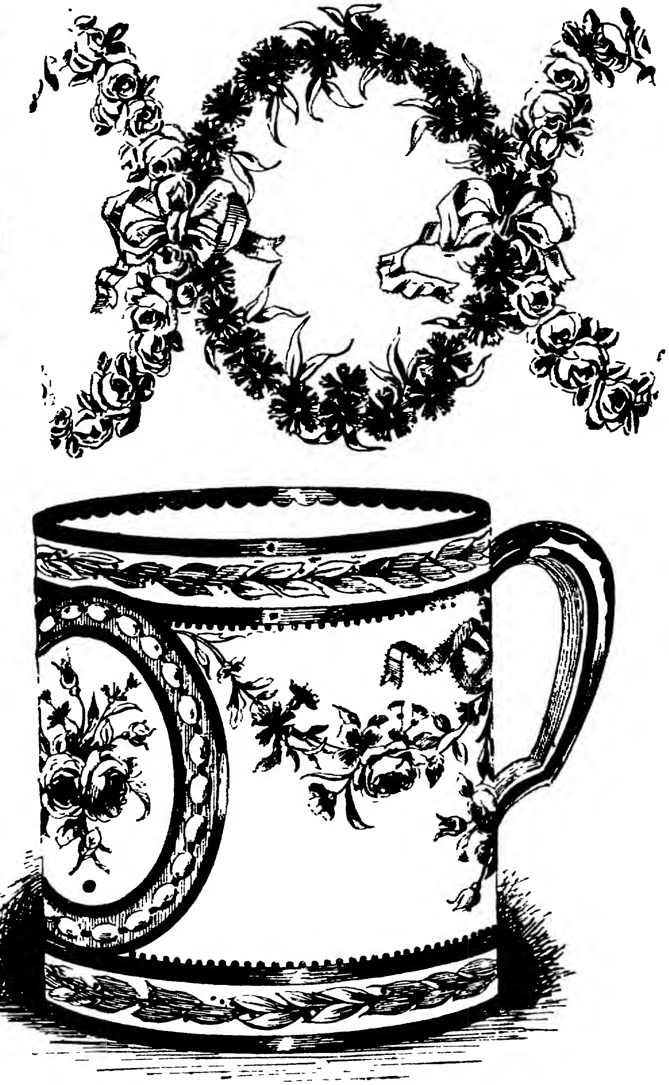
Designs 57–62.—Decorative Floral Initials in "Old Dresden" Rococo Style, by Leonard Lester.



Designs 63-69.—Decorative Floral Initials in "Old Dresden" Rococo Style, by Leonard Lester.



Designs 70-72.—Decorative Initials in "Old Dresden" Rococo Style.



Designs 73, 74.—Decorations Copied from "Old Sèvres" Models.

A suitable neutral background tint may be made by mixing one-third Ivory Black and two-thirds Light Sky Blue. Let this be clouded in so as to relieve the figures with its more shadowy parts, and then, vignette-like, fade away about the margin. The blending process will be apt to do some injury to the sketch. Wiping the colour along the outlines will leave them hard; it is better to stipple it away with an empty brush, and if the thinnest tint is left it will help to soften the contour. Renew any portion of the outline that may have been obliterated, and you are ready for the local tinting of the flesh.

For this mix one-third Flesh Red No. 2 with two-thirds Ivory Yellow, and lay on the tint with a soft, short brush, keeping rather within the outlines and allowing the blending brush to carry out the tint afterward. While this is drying a high finish may be given the background by hatching the stronger shades with a medium-sized brush lightly charged with rather stiff colour. If your experience will not enable you to do this without working up the tinting, rest satisfied with the clouded effect first produced. Many use a spirit lamp or an oven to hasten the drying. This must be done with care, and the work must not be resumed until the china is perfectly cool.

The deepest shadows of the flesh may be touched with Violet-of-iron, and a general shadow tint made of equal parts Flesh Red No. 2; Light Sky Blue and Ivory Black may be lightly stippled on. For the half-tints use the same as prepared for the background. Next touch the lips, cheeks, and ears with Flesh Red No. 1. Paint blue eyes with Light Sky Blue, and brown eyes with Sepia. Shade either with black.

Fair hair is laid in with Ivory Yellow. The warm shades require Sepia, and the half-tints the usual mixture of Light Sky Blue and Black. For dark hair use the browns, then shade with Black and lay Light Sky Blue on the half-tints. Mass the hair in lightly with a good-sized brush, sparing high lights, and do not blend.

In painting cupids, lay on the colours with delicacy, and model the figures slightly, keeping the tints pure, except where they must be softly united. Two firings should ordinarily suffice. When a third firing is needed it is usually to correct errors in drawing, or to reinforce certain passages of colour lost in the kiln.

VIII. MINIATURE PORTRAITURE.

In working from a photograph, the colours are generally placed as follows:—Local Flesh for the high lights on the face or figure; Pompadour for the shadows on the cheeks and lips; Cool Shadow for the delicate gradations which melt into Warm Shadows in the darkest places. Where to put the "reflected light" seems always the most difficult matter, for it is not easily seen in the beginning that there is such a light. Perhaps it may be described most simply as the light in the shadow. A student in object drawing is familiar with this light on all round and spherical surfaces, and knows that without its aid a well-rounded effect cannot be secured. Nothing assists more in the modelling of the features than the correct placing of the reflected light.

In a three-quarter view of the face, looking toward the right, with a full, direct light from that side, the narrow left side of the face will be a plane of unequal shadows. By observing closely, the darkest shadow will be found back from the edge of the face and a half-shadow beyond. This half-shadow is the reflected light —*i.e.*, the light is reflected from some object near the face. You will observe it on the under side of the chin of a head lighted from above. Under all similar conditions, rounded surfaces will present this feature, more or less marked, varying with the intensity or general diffusion of the light. Where the reflected light seems strong and well defined, it will be easy to secure a rounded effect if the proper colouring be observed.

Begin work by laying in the face or figure with little or no background, and fire this first. Then paint the background freely and thoroughly, with as much finish as possible, after which tone up the flesh and drapery for a second firing.

This method has the advantage, that at the first the head and figure can be worked upon freely, without fear of soiling or disturbing a well-painted and perhaps already dry background. Every one who has decorated china knows how difficult it is to patch china colours. This difficulty need not occur in the beginner's first attempt, for there are few backgrounds that cannot be finished in one painting less than the flesh, the exception being in the case of a very dark background. To paint this background thoroughly and delicately, yet correctly, suggest the figure by a flesh wash, with just enough shadow work to hold the drawing. This will insure the piece being ordinarily completed in one firing less than by the previous plan.

A careful study of the subject should be made before beginning work. The part suggesting the greatest degree of finish, in connection with depth of colour, had best be painted for the first firing.

In drapery, in backgrounds, and in flesh for the first painting, either suggest delicately or paint very thoroughly. One or more parts of the work may be done as thoroughly as possible, and others just faintly suggested. The reason will soon present itself in working, for in giving a few broad, suggestive touches of faint colour, say in a background, you do not destroy future possibilities, and in a finish carried to as great a degree as possible you are apt to neglect no portion of the work.

Plan for one extra firing rather than run an undue risk. Be prepared for from three to six firings. No definite number can be set down as necessary; for any one painting or firing may not be as satisfactory as some previous or following one, and again an elaborate figure piece might need six firings, while some dainty Watteau design might be completed in two.

In dividing off the work that may be done on a figure in one sitting, or even that part that may be done in one wash, before it becomes too dry, seek a good place to join where you left off. If no drapery occurs to break the flesh into sections, each easily handled alone, other mode of division must be studied.

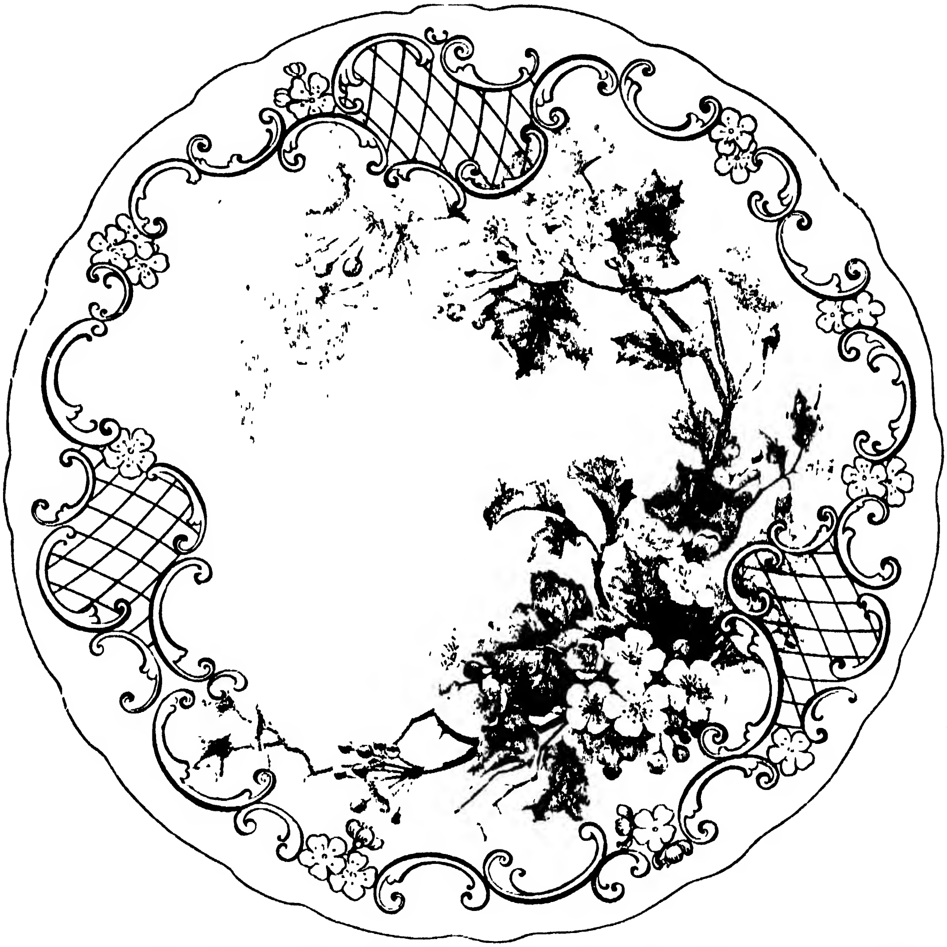
A high light across a shoulder may be made into a joining in two ways: first, by leaving it entirely bare of paint, coming gently up to this narrow space from both sides, but not allowing the washes to touch, and having only allowed the oil to go as far as the flesh wash, which should be graduated to blend perfectly into the white of the china. Rather have this line irregular than perfectly straight. Should the roundness of the shoulder give a curved high light, make the joining a curved line; it will be easier to conceal in the second painting. In this joining, the point especially to guard against is allowing the stippler or brush to touch the dry or half-dry edge of the section previously completed. Should you do so by mistake, and find it leaves a place where the colour seems thick, the result of a second layer, do not attempt to remedy the matter—every touch will make the blemish larger and uglier. Suppress your feelings, and keep out of any further trouble at this sitting. Next day pick out carefully with a knife all this surplus colour. In this way the repair is possible, and it may be so deftly done that, with careful treatment for the next firing, the unevenness will entirely disappear. In each subsequent painting a different place of joining should be chosen. This method allows the work to be done on different days quite as successfully as on the same day.

Another way calls for more rapid painting. In laying on the wash of oil, leave at the place of joining about twice the amount you do on the surface to be painted. Complete the painting of the first allotted space as soon as possible, that the place of joining may still be moist. Charge a clean brush with oil, pass it over the next section in every part, coming last to the joining when the brush is merely moist; then stroke gently into the oil left on the joining, until both seem of the same consistency. Paint nearly up to the flesh just completed; do all desired shading and bring the two parts together in the stippling, always seeking to join in a high light. A whole figure can thus be joined and completed in one sitting, a perfect blending being preserved. This is the more desirable method, and should be striven for. One, at first, might be contented with less modelling for the sake of this moist process; later, gaining in skill, he would be able to carry the work to a more satisfactory degree of finish.

On the plates, let the colour just cover the shoulder, softening into the middle of the plate. On the cups, tint about two-thirds from the top down, and let the saucers correspond.

Work the monogram out with raised gold. This must be very daintily done, the letters joining each other in what is known as script (handwriting); they may be on the colour, or in a little panel outlined with scrolls in raised gold and showing the white china. An idea for this can be adapted from the design for a chocolate pot (design No. 76).

In colour, it would be well to choose some neutral tint, like Turtle-dove Gray or Light Coffee, harmonising with all others. Coalport



DESIGN 75.—CHINA DECORATION. RAISED PASTE AND FLORAL TREATMENT, BY L. HORLOCKER.

IX. DINNER SERVICE DECORATION.

The decoration of a dinner service elegant enough to suit any occasion may be obtained by simple tinting, with the addition of a monogram in gold. Let the colour be rather strong at the edge, and shade off imperceptibly into the white of the china. Give the china a coat of balsam of copaiba just where you want the colour to end, and blend into it with the pad.

Green is excellent, but one would hardly want a whole set decorated with it. It is the same with many another colour that would make a pleasing contrast when used only for a special course.

Fish Sets.—There is incongruity in serving food on plates loaded from centre to rim with ornament, especially such as consists largely of the naturalistic representation of living objects. It is best to use conventional ornament, as a rule, and when living objects are introduced at all, to let them be enclosed in panels or cartouches. Whether naturalistically or conventionally coloured, fish must be perfectly drawn ; they present many beautiful and exacting curves. When the scales are conspicuous, they must be lined off with almost mathematical accuracy. This work need not be disturbed by laying on the local tint ; with a small brush trace the markings lightly over with the colour indicated—probably gray or black. Many fish require more or less black green along the back and around the head. For trout use a salmon tint made of one-third Flesh No. 2, nearly two-thirds Ivory Yellow, the balance Carmine No. 3. The specks may have Carmine No. 3 brightened slightly with Orange Yellow. The Browns and Brown Green may be used in shadows.

Sometimes fish and the surrounding objects are partially covered with irregular horizontal strokes of black green producing a shaded watery effect. If but the faintest hint of water is wanted, use Sky Blue and Black or Carmine and Apple Green. The latter combination is preferable where no shadow is wanted. A similar effect, or something more net-like, may be produced with gilt. But wherever gilt is to be laid the colour must first be removed, else the gilt must be reserved for a second firing.

Shells and Sea-weeds alone make pretty decorations, and you are safer with these than with more substantial objects if your skill is questionable.

Sea-weeds are mostly done with Brown Green, tipped and shaded with Violet-of-iron. Brighter greens, or Carmine and Purple, may occasionally be used.

Ornamental shells may call for almost any colours. Brilliant, pearl-like effects are produced by bringing such colours as Carmine, Violet, Green, and Blue into sudden juxtaposition. Make quick, smooth passes of the brush that will leave a soft gradation of colour, and do not trust to subsequent shading.

Red coral wants Carmine No. 1 and Orange Yellow, shaded with Carmine No. 3 or even Deep Purple.

Bivalves are painted with browns and the usual mixture of Sky Blue and Black. They will bear very effective shades, but must not be made heavy and coarse.

Game Sets.—Large game dishes and game sets admit of beautiful decoration. If birds are placed and drawn in a pleasing, correct manner the colouring is comparatively easy, as many distinct touches are admissible. Be sure, however, to produce a happy gradation of tone, and not a patchy effect. Where there is any overlapping of touches be sure that the colours agree, and that the darker ones are laid on last.

Live game, birds especially, require spirited and delicate drawing. The decorator need not copy minute characteristics as the ornithologist does ; but, while a little less is demanded in this respect, a great deal more is demanded in the way of artistic effect. The colouring, in any case, must come up to a high standard, if it really imitates the tones and gradations of nature.

Dessert Plates, being somewhat outside of the rules governing the decoration of the ordinary table service, may be treated with greater freedom. Even painted miniatures in Boucher or Watteau style may be used in the centre, if suitably set with a border by way of a frame. The Angelica Kauffman medallions (pp. 215, 217) offer some useful suggestions in this way. The actual designs would be suitable for odd plates for sweets or cakes. Dessert plates may have borders of flowers, either with natural or scroll arrangement. Such decorations call for a perfectly plain round plate, with the rim as flat as possible, except, perhaps, for the suggested flower scheme, which is best suited to a plain or nearly plain coupe plate. By the term "coupe plate" is meant a rimless plate so formed as to slope gently from edge to centre.

X. RAISED PASTE.

Contrary to the general impression among amateur china decorators, there is nothing mysterious or even particularly difficult in "raised paste" decoration. With a reasonable degree of taste, patience, and scrupulous neatness, any one who has learned to use mineral colours at all may confidently undertake such work after studying the following simple suggestions :—

In mixing the powder for the paste, it is best to prepare a quantity—say, one bottle—all at once. Put enough Dresden thick oil in it to *damp* it ; but not enough to form a paste. Then add turpentine, a little—more or less makes no difference—and rub all three together on a ground-glass palette until the paste is as smooth as cream, and of about the consistency of paint as it comes from a tube. See that all the grains are rubbed out or dissolved. All this can be done in about ten minutes. Put the mixture into a small jar, and keep it from the dust until it is needed.

After the design has been drawn, and the china is quite ready, take out enough paste for the work you are about to do and again smooth it with turpentine, as it has, perhaps, got hard, or is too thick to flow from the brush.

If it crumbles or comes from the brush in grains, or the lines show each touch of the brush, looking dry and uneven, it stands to reason that some medium is necessary to hold it together ; then add just a very little Dresden thick oil. If, however, the paste spreads after it has been applied to the china, and *remains* soft, looking glazed, then there is too much oil. A little alcohol will counteract this, and will send the oil to the edge of the palette ; or you may add more powder to absorb the oil.

Do not go on with the work until the paste stays exactly where and how you put it, for the gold will only emphasise defects. It is best to use the paste soft enough, so that it smooths itself evenly as it comes from the brush, and the line can be joined without showing in the least. Use a sable rigger No. 1, of medium length ; finer still for very fine lines. Much of the beauty of the work depends upon the strength and spring of the brush.

Take up the paste on the end of the brush, and in *quick*, *short* strokes coax it to follow along the line, and do not wear out your patience in trying to make it flow in one long stroke. You will have no trouble in getting a line or leaf perfectly smooth ; but the paste must be soft, or the little, quick strokes of the brush will show.

Keep the lint or dust out, or it will make the paste flow from the brush in little lumps, greatly disfiguring the work, not only of the line but the whole piece. Paste should *look* perfectly dry, not glazed or soft, ten minutes after it is on, and you may be sure it will not spread or crack in the firing.

"Liquid Bright Gold" (see p. 257) should never be used over paste.

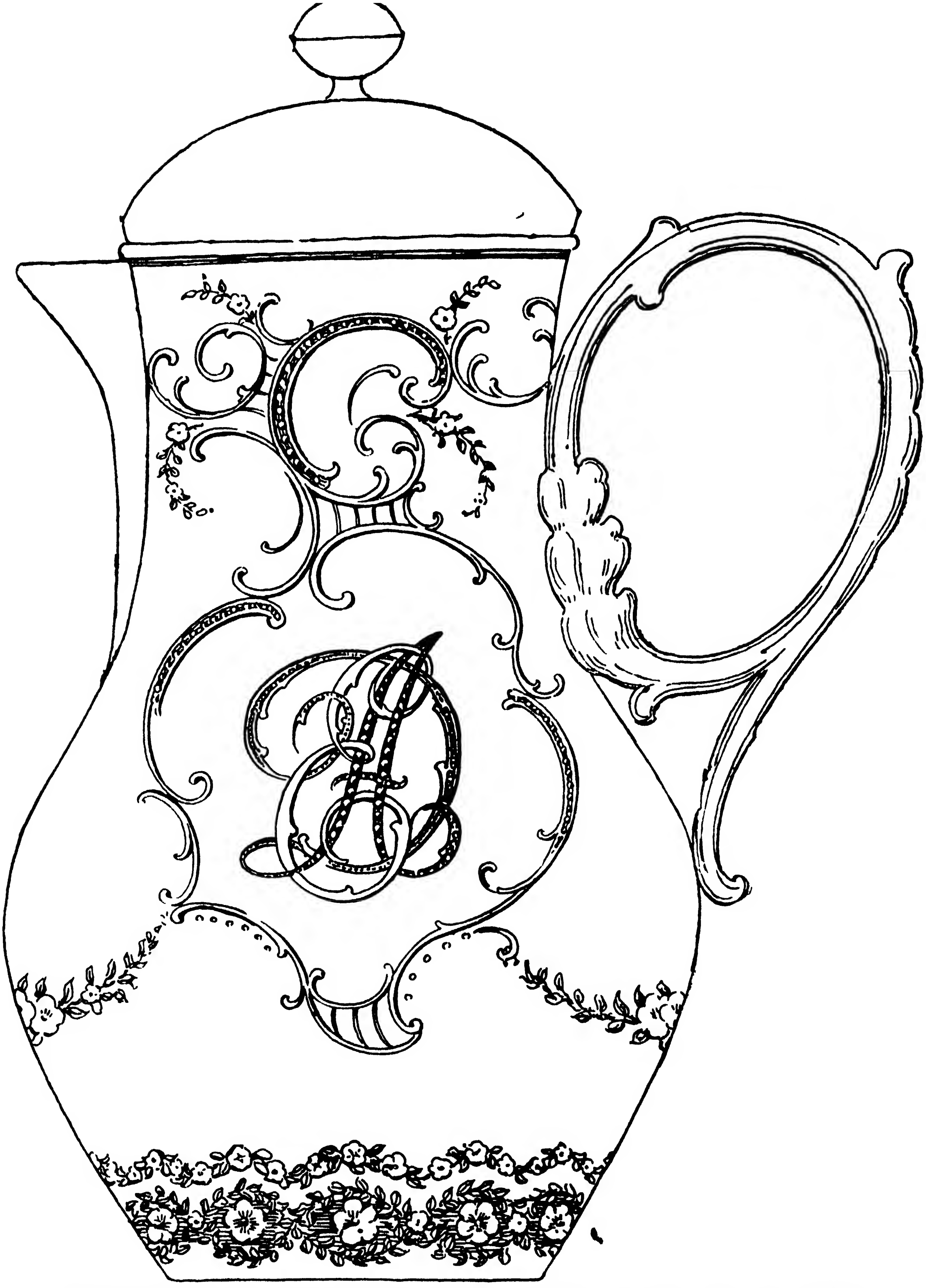
With the aid of raised paste, to give slight relief to the gold in china decoration, great richness of effect can be got with the employment of no other colour than simple tinting. Add a little enamel for accents, and your resources of embellishment are further enhanced ; and all this without the absolute acquirement of anything more than the merest mechanical drawing, or, perhaps, the added ability to render acceptably some simple conventional floral bands or borders. If you are a flower or figure painter you can add cartouches of bouquets or garlands, or Watteau or Boucher groups.

The Chocolate Set.—The decoration may be as simple or as elaborate as you please. It may be carried out in raised gold only ; in raised gold and tinting ; in raised gold, tinting, and enamelling ; or with all the added magnificence of glass "jewels" (p. 285), and miniature paintings in the cartouches.

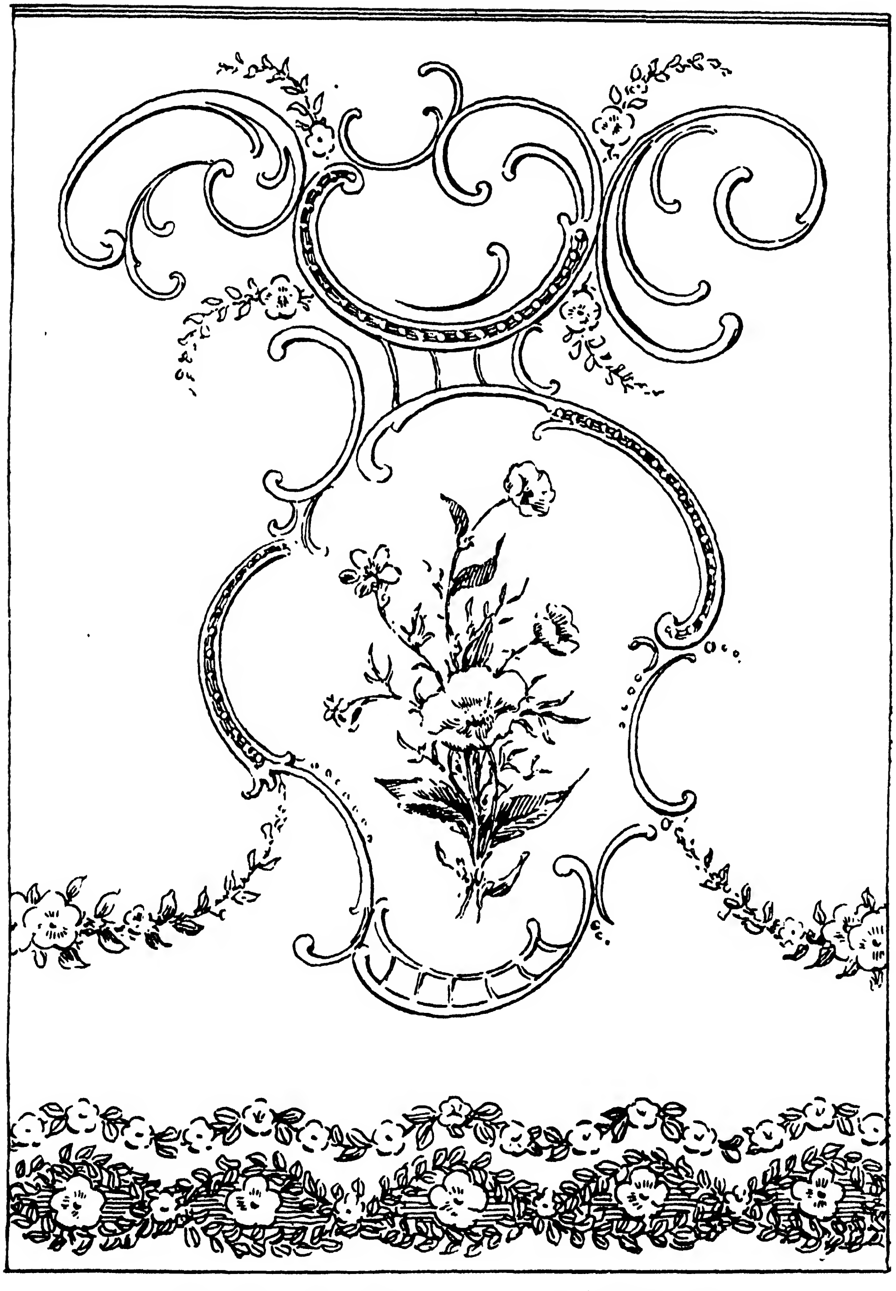
Let us assume that both colour and raised gold are to be used in our decoration, and that turquoise blue is to be the colour.

If you are not skilful in the use of paste, and have frequently to correct mistakes by rubbing out, use an Indian Ink outline as a guide. The Indian Ink will disappear in the firing.

Make a turquoise blue by mixing Deep Blue



Design 76.—Chocolate Pot, with Tinted Body and Ornament in Raised Paste and Enamels, by Anna B. Leonard.



Design 76a.—Side Decoration for the Chocolate Pot.

Green and Night Green. To tint the chocolate-pot with this, begin at the scrolls on the neck and end at the upper edge of the floral wreath which helps to form the border at the base. The portion of the surface on either side which is enclosed by scrolls should be left white. Upon these reserved spaces there is an opportunity for displaying the taste and skill of the decorator. Boucher or Watteau figures may be introduced instead of the monogram on one side, and a simple floral decoration on the other.

In beginning work draw the important curves with Indian Ink. Then apply the tint. The lines of the drawing will not have been disturbed. While the tint is still moist wipe the larger curves, using the finger covered with a piece of muslin, and the smaller ones with a bit of cotton wound snugly on a pointed stick. If flowers and monograms are used, this is all that needs to be done for a first firing.

If a rich effect is desired, put a moderately thin coat of gold over the spout and handle. Fire a second time, after which retouch any places needed to perfect the colour decoration. Cover the paste and give the handle and spout another coat of gold. The lower part may be decorated in either flat or raised gold. Tint the cover with blue, and paint the knob dull gold.

The cup and saucer, to correspond, will need the blue tint from the edge down to the irregular scroll. The bulb on the stem of the cup should be blue banded with gold. The garlands give the touch of colour for the cup and saucer. The roses will be pink, with delicate greens for leaves and tendrils.

A still richer effect may be got by leaving enough space in some of the double-lined scrolls to admit of setting small dots of enamel instead of dots of paste. After the paste has been laid and fired, cover the lines of the scrolls, and also the spaces between, with gold.

Fire again, and set touches of turquoise enamel on the gold in these spaces. For this use the German Relief White (*Aufsetzweiss*) (p. 253) with one-fourth Hancock's Enamel. Then colour this mixture with a pale blue tint made of Deep Blue Green and Night Green, remembering that the enamel colours (excepting some of the reds) fire darker ; so your dots must look paler than you wish them to be after the firing.

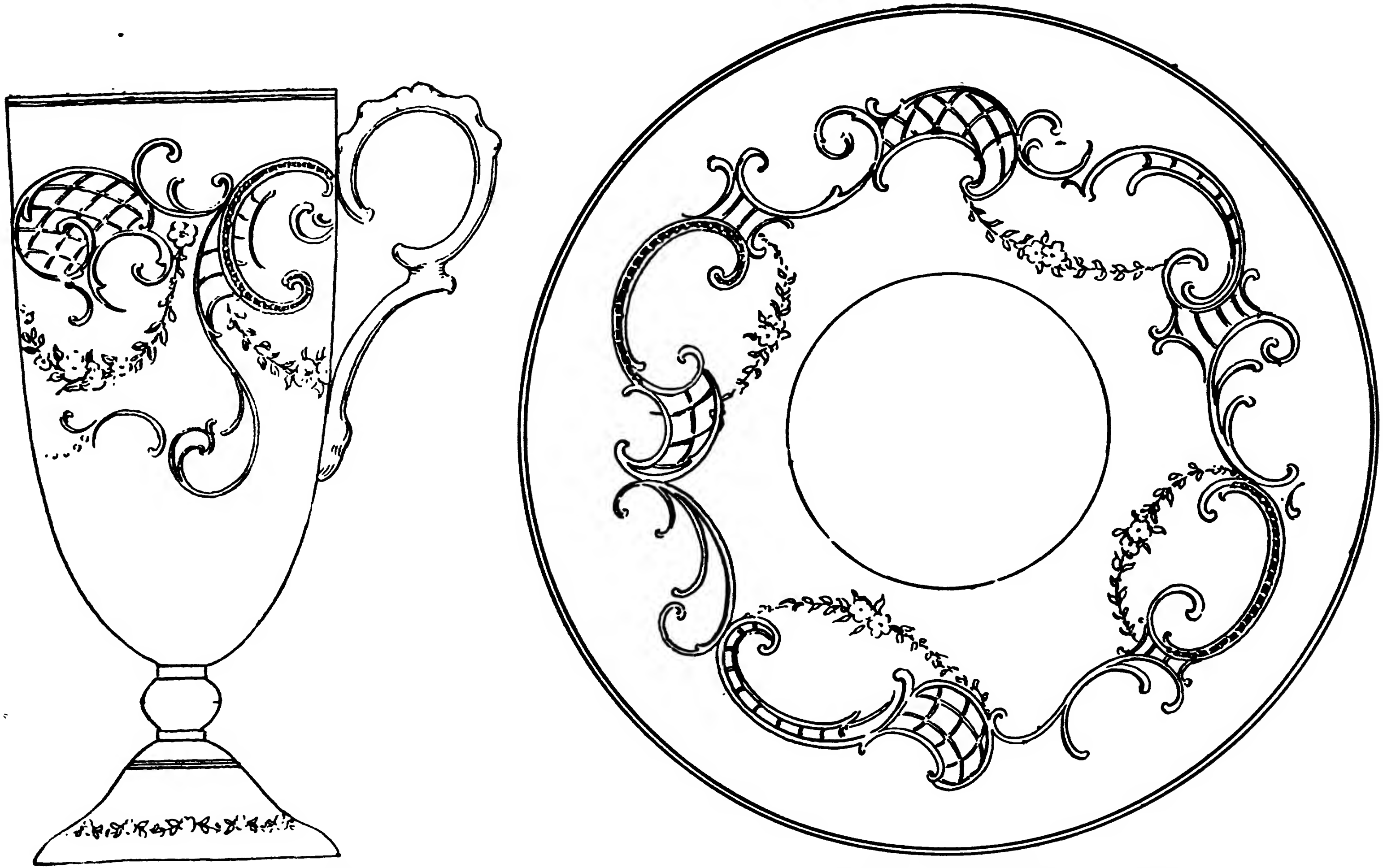
When white enamel dots are used, leave the colour out, of course, and add a very little flux, say one-sixth.

XI. ENAMELS.

Pearls, turquoises, coral, and similar semi-opaque jewels are easily represented by Hancock's Enamel used in combination with the German Relief White in the proportions already stated. The transparent jewels are represented more or less realistically by means of bits of coloured glass, flat on one side, which are made specially for the purpose of attaching to the china in connection with painted or gilded decoration. About a dozen stones (transparent and opaque) are imitated. To this subject we shall return later. Let us speak now of the more legitimate Enamel, to the use of which, perhaps, most decorators of taste will be satisfied to confine themselves in their representation of jewelled effects on china.

The German Relief White is sold in moist form, but the Hancock Enamel is sold in powder. The latter must be well ground with a muller on a ground-glass slab, turpentine or alcohol being used to moisten it. This grinding—which should be very thorough—must be done before any oil is added. It will need only just enough thick oil to bind the particles together. The two materials are then thoroughly combined with turpentine, a bone or bone knife being used for the purpose. The mixture may be used at once, but it will work the better for letting it stand overnight. In moistening it for use, alcohol will be found to make the touches of enamel stand up higher than if turpentine were used for the purpose.

In setting enamel dots, hold the brush perpendicularly. If the head assumes a cone-like form when put on—as it probably will if you use the right quantity of enamel—round it off gently with a clean brush slightly moistened with alcohol. Round down half a dozen or so at a time of these little cones. Do not be afraid of making the dots too full, for after

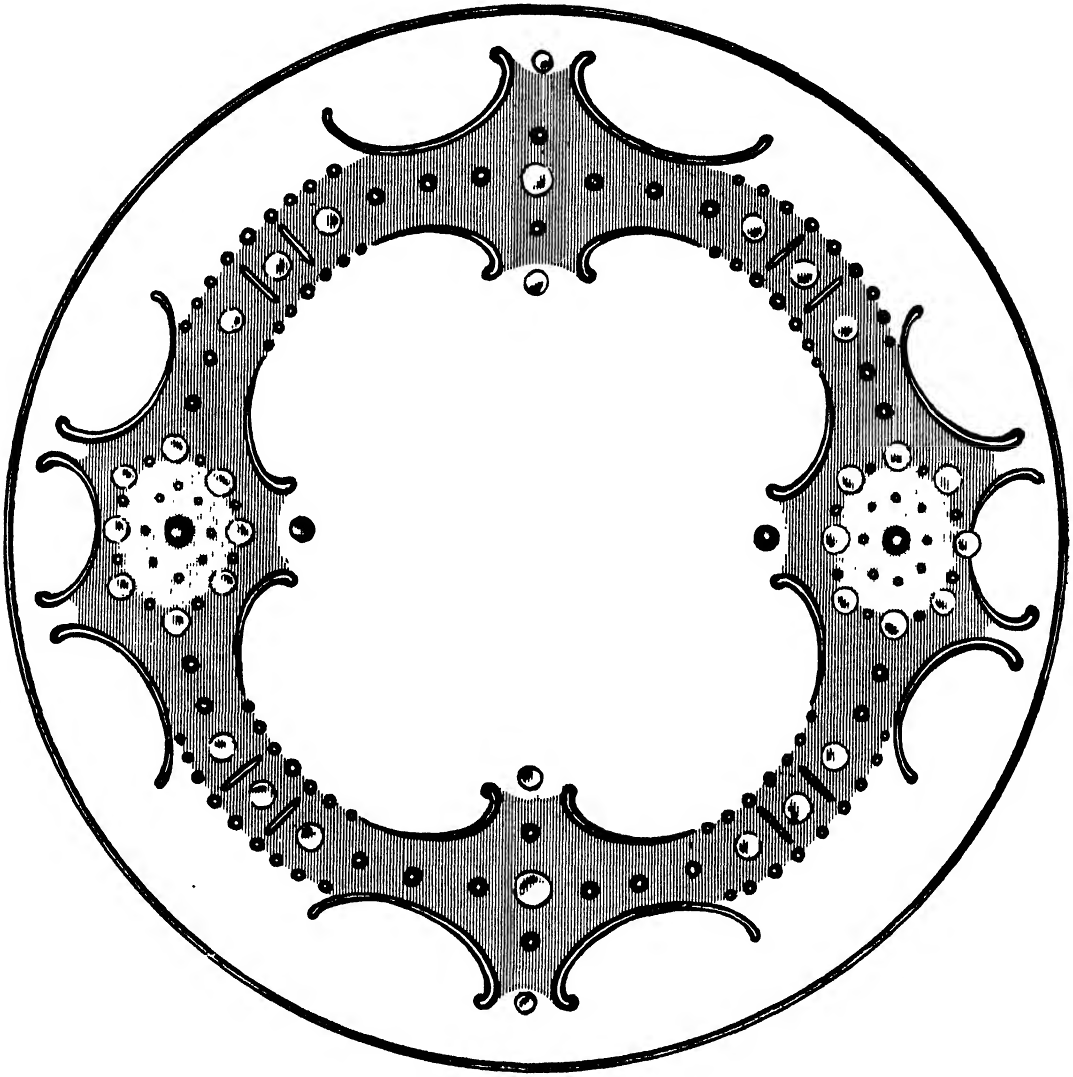


Design 76b.—Chocolate Cup and Saucer, with Tinted Body and Ornament in Raised Paste and Enamels.

firing they will be found to have shrunk about a third, owing to the absorption of the oil. Knowledge of this fact will teach you to avoid using too much oil.

By using a little oil of tar with the mixture, high relief; but there is danger of it scaling in a second firing.

In colouring enamels, always select as a red some gold colour or Rose Pink. Any iron red —such as Deep Red Brown— will change in the firing. Remember that all colours will fire half stronger than they appear on the palette. When enamels of different colours are to be used on the same piece, care must be taken that the colours are such as will fuse equally at



DESIGN 77.—SAUCER (OR PLATE) DECORATED WITH GILDED RAISED PASTE WORK AND GLASS "JEWELS," BY C. E. DARBY.

line work may be laid with it as readily as with the raised paste.

The Hancock Enamel may be used alone, and there are two points strongly in its favour —it glazes at a low temperature, and fires in the same heat. When some colours come out dull and others brilliant, the cause is probably due to the different quantity of flux used in the colours.

Charming jewelled effects may be produced in combination with raised paste. The dots should be placed near each other; but they must not touch. Chains of varying length made in this way afford variety of treatment. Much can be done with chains or groups of three, five or seven dots: either with the largest dot in the centre, and the neighbouring ones on each side graduating to the smallest at the ends; or with the largest size at each end, and the other dots gradually decreasing as they near the centre. First indicate, with a pencil, the sizes and positions of the raised paste circles or other settings which are to enclose the enamel "jewels."

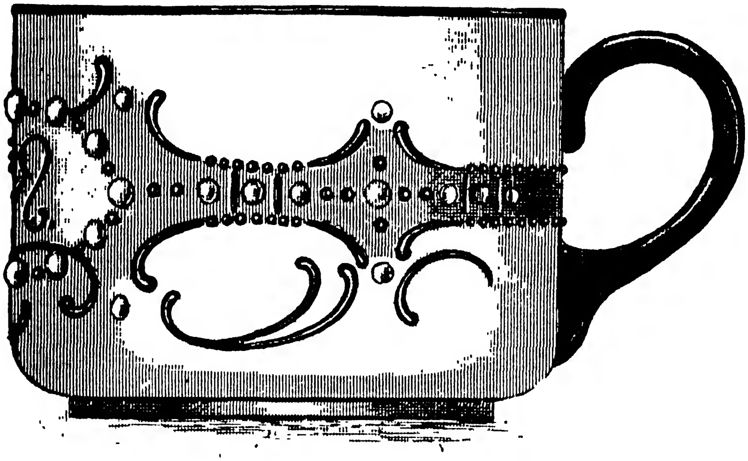
With enamel jewelled effects two firings may be enough, but three are safest: the first for the paste, the second for the gold over the paste, and the third to fix the enamel.

The chief risk about depending on two firings is in the gold over the paste going a little beyond the dots or settings, and coming in contact with the enamel when placed, and discolouring it. Three firings obviate this difficulty.

XII. GLASS "JEWELS."

To return to the subject of glass "jewels." There is a semi-barbaric magnificence in the use of these which takes the fancy of many amateurs who have tried them, and they must not be ignored, however inclined the present writer, personally, may be to recommend the restriction of their use to the ingenious lady decorators on the other side of the Atlantic, with whom he believes they originated.

Of the precious stones imitated, the representations of pearls, turquoises, amethysts, and emeralds are best; the rubies, sapphires, and topazes, and pink and red coral are pretty good; the diamonds are worthless. With raised gold settings some of the "jewels" of the first-named group may be used with very gorgeous effect.



Design 77A.—Cup decorated with Gilded Raised Paste Work and Glass "Jewels," by C. E. Darby.

Jewelling is a simple process, requiring merely the application of a certain cement, sold for the purpose, to the surface of the ware to be decorated, and to which the "jewels" will easily adhere. The same cement may be used for both china and glass, it partaking in its own composition largely of the nature of glass, and requiring no more heat for its complete fusion than will liquefy the surface of ordinary window glass. It is a white or yellowish powder, which is prepared by mixing with any desired quantity just enough fat oil of turpentine to hold the powder well together in a slightly moist condition.

A horn palette knife or glass muller should be used, and the best palette is a piece of ground glass, its roughened surface aiding the action of the muller or the knife in bringing the powder quickly to the velvety, compact mass, almost as stiff as paste, into which the cement resolves itself when ground enough. Drops of turpentine may be added as often as the powder begins to work dry and *grainy*. The turpentine quickly evaporates under the grinding, so there is no danger of using too much; but only a few drops at a time will be necessary. Jewels are striking embellishments for plate borders. The place for each jewel should be planned; a tiny drop of the cement, freshly ground for use, applied to the china by the end of a small brush and the jewel deftly landed on the *centre* of that drop and slightly pressed down until it adheres to the cement. If too much cement be used, it will spread outside the jewel, and cleaning it away will be a troublesome task.

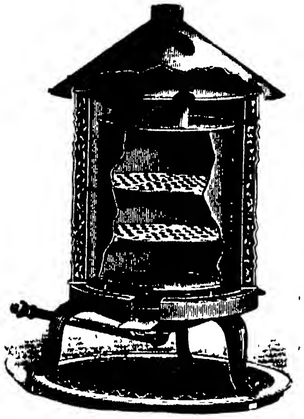


FIG. 171.—AMERICAN STUDIO KILN, FOR CONNECTION WITH THE DOMESTIC GAS FIXTURE.

XIII. SENDING CHINA TO BE FIRED.

Before sending china to be fired it should be thoroughly dried in the oven; unless the fire be very hot, the door can be shut. The heat may change the colours: for instance, the carmines will look like yellow brown. But no harm is done; they will be all right when fired. It is a good plan to stand cups, vases, or any article difficult to handle, on a plate or platter that can be easily removed from the oven and placed on a table till cool. It is better to put the china on the slide when the size will permit than on the bottom.

Many decorators, in order to draw directly on the china with a lead-pencil, wash it over with a thin coat of turpentine. Although it dries immediately, it makes rather a sticky background to work on. Paint from the fingers will quickly be transferred to it, and unless it be carefully wiped off after the painting is finished it will make an ugly stain that can only be removed with acid (see p. 287). Turpentine should never be used in this way when Liquid Bright Gold is to be applied.

The slightest smear from this gold, that is almost imperceptible to the eye, becomes a purple stain when fired. Never dry liquid gold in the oven or by artificial heat; it does not fire so well as it otherwise would. If it be used in a design with colour, dry the colour and then put on the gold. Neither turpentine nor alcohol can be trusted to remove its stains, as in the case of paint. Nothing but water will touch it. Moisten a cloth or stick, as the case may demand, and wipe until the surface of the china is clear and dry.

An alcohol lamp is often used to dry china; but great care must be taken not to let it heat unevenly, or the china will break. The flame should be passed rapidly over the entire surface. This is a very convenient method when an oven is not accessible. Do not let the flame touch the paint, or it will set it on fire.

In case a piece is painted in the studio, and is to be sent directly to the firer, without an opportunity to dry it, it should be wrapped in plenty of cotton-batting and thin paper. The cotton will stick to the surface of the paint, but that need not disturb you; it will all disappear in the firing.

If you have a dozen cups and saucers to send by parcels post, wrap each cup in soft paper. Newspaper or stiff wrapping paper is too harsh, and will scratch the paint even when very dry. Put four cups inside each other. Do not jam them in, or they may break. Then wrap them in any kind of a paper and tie the package firmly with a string, so that they cannot come apart. Make three packages out of the dozen. Do up the saucers separately in soft paper. Stand six together, with plenty of soft paper between; wrap them with strong paper and tie them.

Always use a wooden box. Put in plenty of paper, straw or excelsior. The latter, which is the best thing to use, can be bought of any furniture dealer; put plenty of whatever packing material is used, at the bottom of the box and sides. Pack the bundles so that they will not touch each other or the box, and so firmly that they cannot move, and they will travel any distance without injury. Be sure that the packing material is perfectly dry. If it be damp the paint will absorb the moisture, and it may do harm, especially to some kinds of gold.

If, fortunately, you live near a kiln and can deliver your own china, observe the same rules with regard to drying in the oven and wrapping in soft paper, even if the box is to be carried only a little way.

In case gold edges are to be put on by the firer, the paint should be removed when tinting has been used. It can easily be done by placing a clean cloth moistened in alcohol over the forefinger of the right hand, and, holding the article in the left hand, moving the edge slowly against the under side of the finger-nail. If you take off a wide line, it will cost more to gild it. There is a regular price for narrow bands; any wider ones cost more.

XIV. CORRECTIONS AFTER FIRING.

The only way to correct mistakes after firing is by the application of hydrofluoric acid, such as is used for etching on glass. This is a most dangerous fluid, and is so powerful that it has to be kept in a gutta-percha bottle, which in turn is kept in a small tin or wooden box; for the fumes (which are hurtful to the lungs and, in a measure, to the eyes as well) escape as soon as the rubber stopper is withdrawn, and destroy nearly everything with which they come in contact. The acid must not be allowed to touch the flesh under any circumstances; for even a single drop of it, full strength, would cause intense pain. The antidote is sweet oil. Rubber gloves are usually worn to protect the hands. The only safe way to apply the acid is to dip a pointed stick into the bottle and rub with it the part to be effaced. If the spot is a small one, wrap a piece of raw cotton on the end of the stick, tie it, and wet it with water before dipping it into the acid bottle. Diluting with water will prevent the acid acting too quickly, so injuring the glaze and removing any more of the colour or gold than is desired. Rub gently over the surface to be removed. The first touches will have loosened the colour, and it can be rubbed about easily. When the entire surface moistened has been loosened, wash it quickly with plenty of of water, rinsing freely, so that no other part of the decoration be attacked by the acid.

By using a small tool and the solution weak, very neat work may be done, even to vignetting the colour at the edges of the part to be treated, by coming up to it with hardly any acid on the cotton. The end of the stick may be wrapped with fresh cotton as often as is required by the loosened paint collecting on it. To remove a considerable mass of colour, a weak solution of the acid (about a teaspoonful to half a pint of water to begin with) is prepared in a tin pan. A bunch of cotton at the end of a stick is dipped frequently into the vessel and applied. In this way there is much less danger to the operator than in the other way described, for the bottle containing the acid need be opened only once or twice during the operation.

Having told how hydrofluoric acid should be used to erase errors, we would now urge the reader not to use it at all. The amateur china decorator would do much better to throw aside a few failures than incur the risks we have pointed out.

UNDERGLAZE DECORATION.

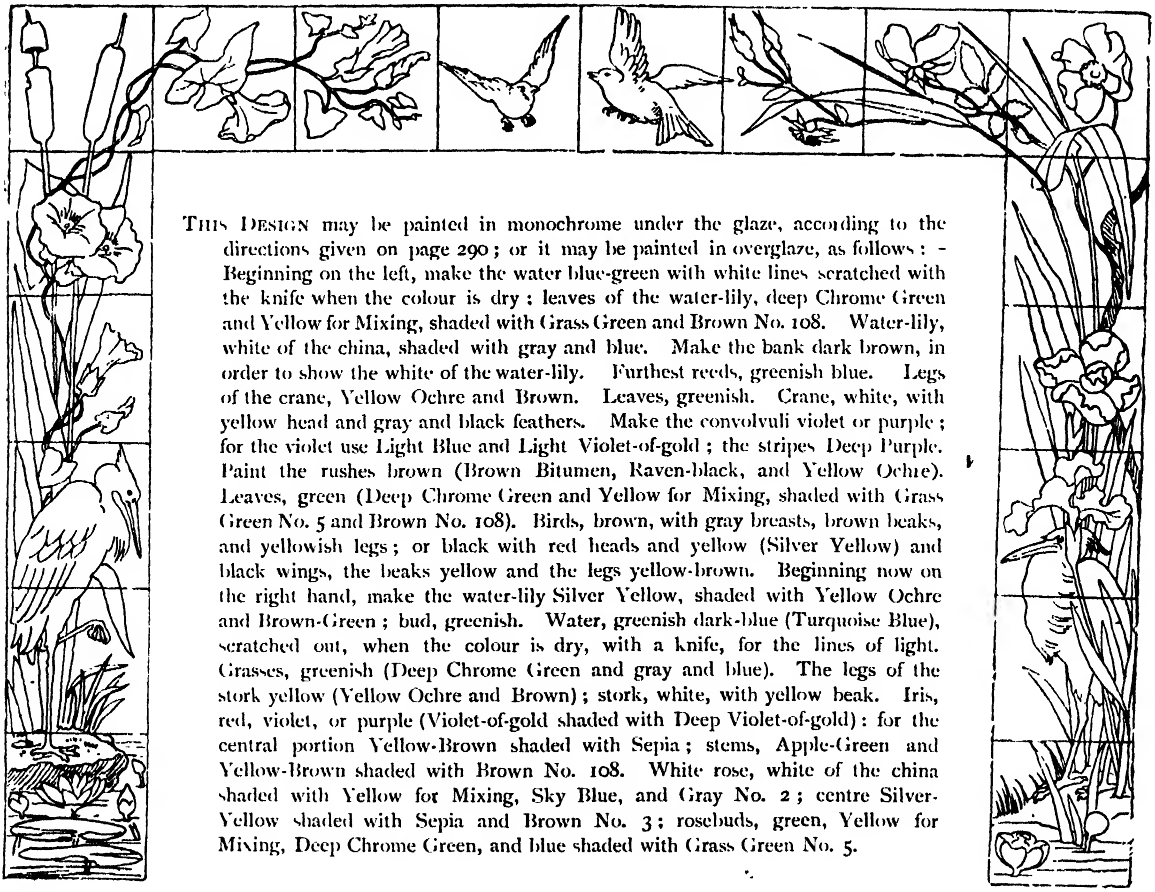
I. INTRODUCTORY.—THE COLOURS.

THUS far we have been concerned only with painting over (*i.e.* on) the glaze with enamel colours. We have now to consider the somewhat more difficult undertaking of painting on the "biscuit"—the rough, *unglazed* ware. For this different colours are used, and a much greater heat (sometimes 2552° Fahrenheit) is needed to combine them with the glaze: the latter usually is applied at the pottery, where the decorated objects of the amateur should be sent to be fired.

It is possible, perhaps, for the amateur to procure the glaze and apply it himself, but it would not pay him to do so; for, after all, he could not *fire* the ware, even if he possessed one of the convenient American portable studio kilns, which answer capitally for firing overglaze work. The *grand feu* is needed to fuse glaze and colours together, and no ordinary kiln would stand it.

The great advantage of underglaze decoration over that over the glaze lies in its unctuous richness of colour, and the "liquid-looking" quality of the glassy covering. The melting of the glaze with the colours destroys the hard edges of the work and softens the whole effect of the decoration.

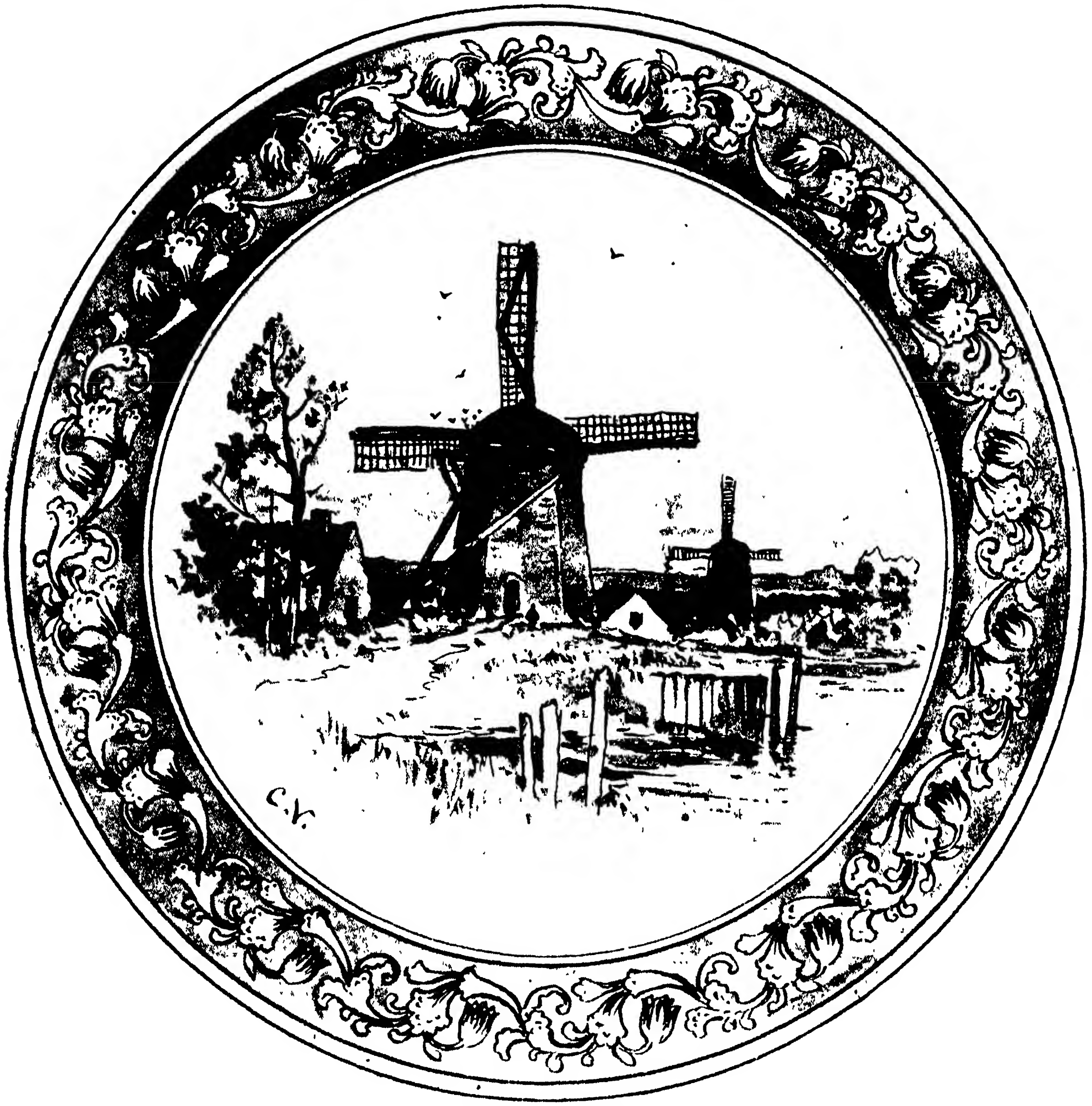
Underglaze colours contain no flux, and if fired without glaze would adhere to the ware so slightly that one might rub them off with



THIS DESIGN may be painted in monochrome under the glaze, according to the directions given on page 290; or it may be painted in overglaze, as follows:—Beginning on the left, make the water blue-green with white lines scratched with the knife when the colour is dry; leaves of the water-lily, deep Chrome Green and Yellow for Mixing, shaded with Grass Green and Brown No. 108. Water-lily, white of the china, shaded with gray and blue. Make the bank dark brown, in order to show the white of the water-lily. Furthest reeds, greenish blue. Legs of the crane, Yellow Ochre and Brown. Leaves, greenish. Crane, white, with yellow head and gray and black feathers. Make the convolvuli violet or purple; for the violet use Light Blue and Light Violet-of-gold; the stripes Deep Purple. Paint the rushes brown (Brown Bitumen, Raven-black, and Yellow Ochre). Leaves, green (Deep Chrome Green and Yellow for Mixing, shaded with Grass Green No. 5 and Brown No. 108). Birds, brown, with gray breasts, brown beaks, and yellowish legs; or black with red heads and yellow (Silver Yellow) and black wings, the beaks yellow and the legs yellow-brown. Beginning now on the right hand, make the water-lily Silver Yellow, shaded with Yellow Ochre and Brown-Green; bud, greenish. Water, greenish dark-blue (Turquoise Blue), scratched out, when the colour is dry, with a knife, for the lines of light. Grasses, greenish (Deep Chrome Green and gray and blue). The legs of the stork yellow (Yellow Ochre and Brown); stork, white, with yellow beak. Iris, red, violet, or purple (Violet-of-gold shaded with Deep Violet-of-gold): for the central portion Yellow-Brown shaded with Sepia; stems, Apple-Green and Yellow-Brown shaded with Brown No. 108. White rose, white of the china shaded with Yellow for Mixing, Sky Blue, and Gray No. 2; centre Silver-Yellow shaded with Sepia and Brown No. 3; rosebuds, green, Yellow for Mixing, Deep Chrome Green, and blue shaded with Grass Green No. 5.

DESIGN 78.—FIREPLACE FACING OF EIGHTEEN (OR SIXTEEN) TILES. TO BE EXECUTED IN EITHER OVERGLAZE OR UNDERGLAZE PAINTING.

the finger. When they have dried just after they have been applied, they are dull and chalky; but the glaze works a great transformation, and they emerge from the kiln resplendent with life, depth, and brilliancy.



Design 79.—Underglaze Pottery Painting. Plaque Decoration in "Delft" Style.

There are three methods of applying colours for underglaze decorations on biscuit ware. The first way is with an oil medium, in which the decorator is limited to an outline, and nearly flat tints of transparent colours only. The second is with a water, or rather gum-tragacanth, medium, and with only transparent colours. In these two methods special attention is given to the outline, and only a white body can be used. The third method is in the broad, free style called "Barbotine," and is altogether different from the first two methods mentioned.

The number of colours used by the painter in underglaze is smaller than for overglaze. The following would furnish a rich palette. (We have impartially selected the best from the lists of both Messrs. Hancock & Son and M. Lacroix.)

Blues.—(Hancock's) *Mazarine*, Nos. 1 and 2, are rich, deep, purplish-blue, very intense. The finer colour is No. 1, and it is darker than No. 2. Both look black before firing. Without admixture with Black they are too purplish for Delft Blue decoration.

(Lacroix) King's Blue is rich ultramarine.

Browns.—(Lacroix) *Yellow Brown* somewhat resembles Burnt Sienna, valuable for shading flesh, drapery, and grounds, and for toning green. Manganese, a purplish brown.

(Hancock) *Vandyck Brown* is a rich, warm, transparent brown.

Yellows.—(Lacroix) *Light Yellow* and *Dark Yellow*; both useful, rich, transparent colours, the latter especially for toning greens.

Black.—(Lacroix) when used thinly is a dull green, very useful for foliage.

Reds.—(Lacroix) *T Red* is the best underglaze red, but is rather unmanageable in the kiln. The Hancock *Pink* is bright and serviceable.

Greens.—(Lacroix) *Deep Green No.* 1, a cold chrome green; it makes good blue greens mixed with King's Blue. (Lacroix) *Light Green* is a beautiful and useful warm, light, transparent colour.

II. MONOCHROME.—COMBINED UNDER- AND OVERGLAZE METHOD.

Underglaze painting that needs only one firing is no more difficult than the same kind of painting in overglaze. Monochrome decoration in the Delft style affords admirable scope for such work, especially if it be executed in blue, which is the strongest of all the underglaze colours and the safest to fire. A flat surface should be selected for the first essay—a six-inch Minton tile would be very suitable. "Old Blue" comes nearest to the true Delft blue; it is sold in powder, but ready prepared for use, except for the mixing with gum tragacanth and water, which is the medium used in all cases for this kind of painting, taking the place of water, turpentine, or oil. To lighten the tint, white is employed, as in water-colour painting in body colour (*gouache*). Water-colour brushes are used; large ones for washes and small-pointed red sables for details.

Taking the design No. 79 for a model, first wash the tile in water and then make the sketch with a hard lead-pencil. Then pass a wet sponge over the tile, so that the drawing is only slightly visible. It is then ready for the brush. Use a red sable, going carefully over the now faint outlines and washing in as if you were working in water colour. The darker parts will naturally be left until toward the end, and the very dark touches last of all. When the painting is dry, it may be sent to be glazed and fired to any pottery where white ware is made. Underglaze Blue requires the strongest possible heat—white heat. The temperature should be 2552° Fahrenheit. All other colours in underglaze only call for about half this strength of fire. Cherry red (1652°) is the usual heat necessary for good china firing.

When you are ready to undertake something more ambitious than the decoration of a tile, you will find such a subject as the head by Miss Ellen Welby (Plate D) not only an excellent model for monochrome painting under the glaze, but for painting in full colour in the combined under- and overglaze method. This method is much more desirable for the amateur than painting entirely in underglaze, which calls for several firings which it is impossible for him to control. With an underglaze foundation requiring only one firing, he can carry the work to completion very satisfactorily by subsequent paintings in overglaze. In addition to Blue—which is so strong as to be rather unmanageable unless used alone—the colours most available are Orange, Yellow, French Green, Brown, and Black. Any or all of these may be combined for a single firing, affording such an excellent groundwork that, if the subsequent overglaze paintings are fired with care, they will melt into the underglaze, with such rich effect as will make it difficult for any one to say that the decoration is not *all* underglaze.

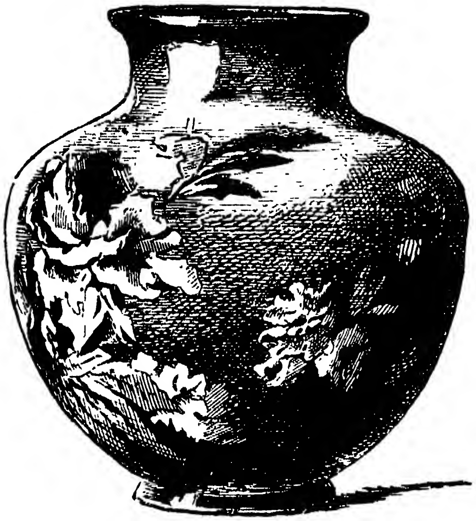


FIG. 172.—UNDERGLAZE PAINTING IN "BARBOTINE" STYLE (Executed by Messrs. Haviland & Co., Limoges.)

The underglaze reds and pinks are too uncertain in firing to be recommended for use for the flesh tints. These, as well as the shadows, the grays, and other delicate tints, would have to be painted over the glaze.

III. BARBOTINE PAINTING.

The "Barbotine" is essentially a painter's process and is admirably adapted to landscape. Who does not know the artistic "Haviland plaques" and vases decorated in this style with all the consummate skill for which the ceramic painters of Limoges are famous?

The following hints on underglaze painting by the opaque method are given on the authority of Mr. Charles Volkmar, a talented American landscape painter, who got employed in a Limoges pottery as an artisan in order to acquire the art of Barbotine painting, which he now practises with great success:—

The best results in underglaze are obtained with a simple palette.

The intensity of shade depends on the degree of heat to which the decoration is subjected in the last fire or the glazing process.

After many years of experience in the opaque method, I have discarded all colours but the following:—White, Orange, Yellow, Claret Brown, Dark Brown, Red T, Rose Pink, Matt Blue, Blue, Black, French Green, and Manganese.

Be careful of a too free use of greens, especially those on an oxide-of-chrome basis. They should always be toned with Black or Claret Brown. Green should only be used pure in something requiring a positive green colour. Black and White alone will make a

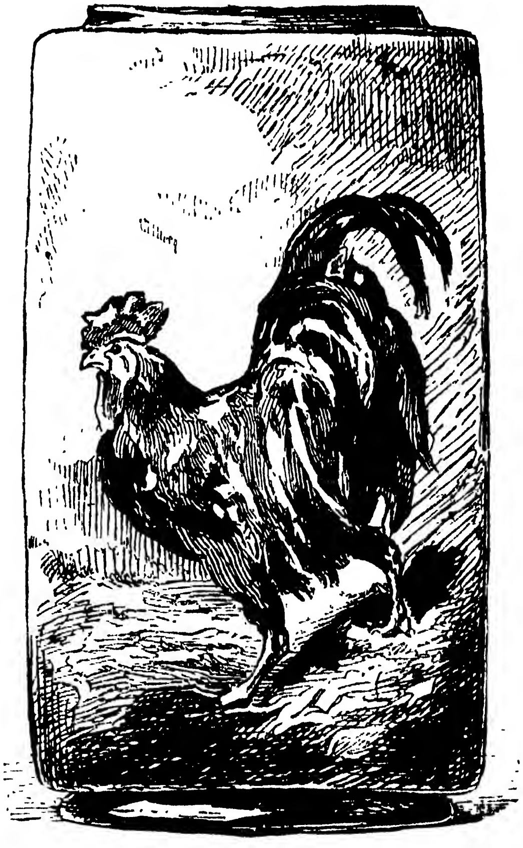


FIG. 173.—UNDERGLAZE PAINTING IN "BARBOTINE" STYLE. (Executed by Messrs. Haviland & Co., Limoges.)

dark Olive for the background of flowers, and by breaking this combination in places with Claret Brown a rich result is obtained.

Be careful in the use of Yellow or Orange; they are both powerful colours, and if used too freely will give a common quality. At the same time, these two colours are the first to be affected by sulphurous gases in the kiln, which destroys them and makes the decoration gray.

The first painting of both flowers and landscape should be very simple. Plenty of white in all shades should be used, even where the most intense quality of colour is desired. Use Black and White, and Dark Brown and White for the darker parts; and Red T, White, and Orange and White for all lighter parts. Lay in the sky with pure white. These are the best combinations for laying in or first painting of both flowers and landscapes. On this groundwork a larger variety of colours can be used in repainting.

All work should have a light appearance before being glazed, and so a rich quality of colour will be obtained.

If colours are used too pure, the decoration will fire too intense or black.

In painting water, never use Green, Black, and White. Matt Blue and Yellow will give all the greens required. Green is a hard colour to control, and a little more or less fire in glazing will produce different results.

In painting skies, for the lighter parts use a little Yellow and White, or Red T and White; for grays, Matt Blue, Red T, and White; for blues, only Matt Blue. All other colours are risky to use in skies when a light effect is desired. Never make a gray for a sky with Black and White, which produce a greenish tint.

In mixing colours, bear in mind that some are stronger than others. Red T, for instance, is a delicate colour. In making a mixture of even quantities of Black and White, and Red T and White, the red would be destroyed by the black in the firing process.

Red T can be mixed advantageously with Yellow, Orange, and Matt Blue only.

Red T fires a light brick-red, and to obtain a good result it should not be painted over another colour containing black. Such tints should be scraped off the spot where you intend to use the Red T. Mix half White first, and when dry give it a second coating of pure Red T. Use it heavily; otherwise it will fire out.

Rose Pink is even more delicate than Red T; it should never be mixed with any other colour, except White, and used with the same precaution as Red. To warm Rose Pink, paint over Orange and White. To obtain a good result with these two colours, the palette should be perfectly clean, as also the water used for thinning them. Sulphurous gases will destroy both colours.

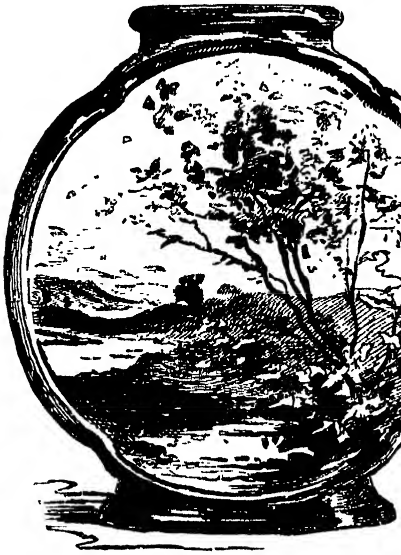


FIG. 174.—UNDERGLAZE LANDSCAPE PAINTING IN "BARBOTINE" STYLE.

Manganese should not be mixed with other colours, but only used as a glaze to tone down; a great deal of the gum-tragacanth medium should be used with it.

Be careful not to have too much medium when solid work is required. The colours should only be mixed to a paste with the medium and thinned with water. Only in toning down with pure colour it can be used freely.

A scraper is very useful, and should be used continually.

The brushes used in painting should be long, so that they can hold the colour freely. Both bristle and sable brushes can be used.

A bold, free, and vigorous handling produces the best result in the firing.

The more you work over and over, the richer will be the colour result, always providing you keep away from too pure colours (that is, colours without white). Pure colours should only be used as a glaze with plenty of medium during the process of painting, especially in finishing.

The great advantage in underglaze is that the fire will harmonise almost any combination, providing the slightest judgment in harmony is exercised. Do not, for instance, try to paint blue flowers on a dark brown ground or pink roses on a pure blue ground.

The first coating should contain a great deal of white and be put on as evenly as possible. Lay on the paint with a (not too short) bristle brush, using the same in short strokes with a cross handling. If the subject is complicated, make the drawing on a thin piece of good manilla paper; prick it and pounce it on the prepared surface with pulverised charcoal. It is understood that the surface should have a coat of colour before the operation of pouncing or other method of drawing is begun.

Outline the drawing with a sable brush, generally using a little Dark Brown with White.

At this stage it is advisable to pay great attention to the drawing; that is, have the subject well decided. In making changes scrape off lightly; never rub the colours.

By drawing, I mean the general construction, not the details. These should only be attended to after the masses have been well loaded with colour. In working the details, a little vehicle (*i.e.* gum water) can be used to advantage with sable brushes.

Any alteration can be made, but the scraper should be used to remove superfluous colour before repainting. The scraper is an indispensable tool.

In painting a dark mass upon a light place, scrape off a little of the light colour; or, in other words, prepare a kind of hollow or bed for it; as the darker colours contain more flux, they might run in the firing. This treatment refers especially to the earlier stages of the painting, before much vehicle has been used. The use of vehicle must be guarded against until the subject is thoroughly laid in with colours containing white.

For detail work and toning down, the vehicle is indispensable, for by its use the pure colours will retain more brilliancy.

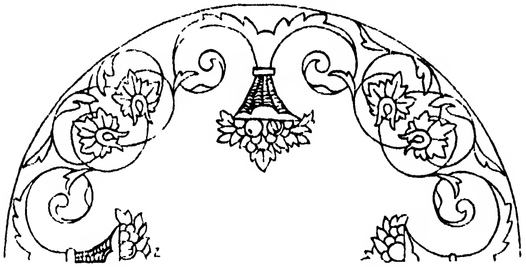
Should important alterations become necessary, scrape off and recommence with lighter solid colours.

The most successful workers in opaque underglaze are generally those who have the least method in their painting, but build up their subjects by working a little here and a little there, doing much scraping and making plenty of alterations.

GLASS PAINTING.

The china painter who wishes to learn how to paint on glass has but little special knowledge to acquire. He must know the kinds of glass, at least, so as to be able to tell soft glass from hard, because that makes a difference in firing, and it is even more necessary than in china firing that all parts of the kiln be kept at an equal temperature. Otherwise the work is much the same as that of the china painter. But as the reader may not be a china painter, and may wish to begin with painting on glass, it will be best to put all the principal operations of the process plainly before him.

First, as to design. The good workman is complete master of the styles in vogue, and sketches his ornament directly on the glass, inventing new combinations as he needs them. It is only when he has to decorate a set of pieces all with the same pattern that he uses a pounce. But the amateur may prefer to trace an engraved pattern, or to work out his own design at first on paper. Whatever the style of decoration selected, extreme neatness, lightness, and delicacy should characterise the pattern and the workmanship. The glass should not be hidden with enamel; and, as a rule, a fine arabesque in gold, with a dotting of enamel colours, will be found most appropriate, Still there are good designs in which enamels and gold are used more boldly.



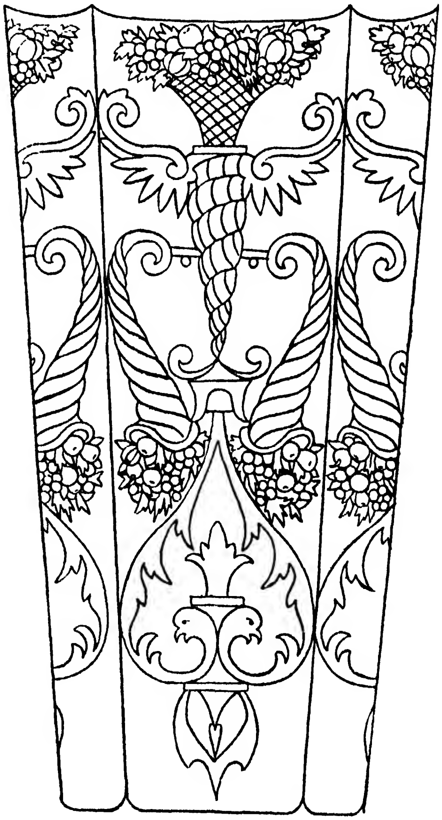
Design 80.—Decoration for Centre of an Ice Cream Plate.

The amateur may find it best, as has already been said, to work out his design on paper. As the ornament is usually applied to the rim of the goblet or other vessel, there will be no difficulty if he makes it of the proper size, taking the circumference of the glass by wrapping the paper about it. If the pattern is to repeat all around the glass there had better be at least four repetitions of the motive. But it may be perfectly free, as in most Rococo patterns. In that case, however, it must be seen to that the ends of the design come together gracefully, and without showing any apparent break. To do this with certainty, we may fold the paper so that the two ends join, which will enable us to see what may be necessary to make the junction indistinguishable and as graceful as any other part of the design.

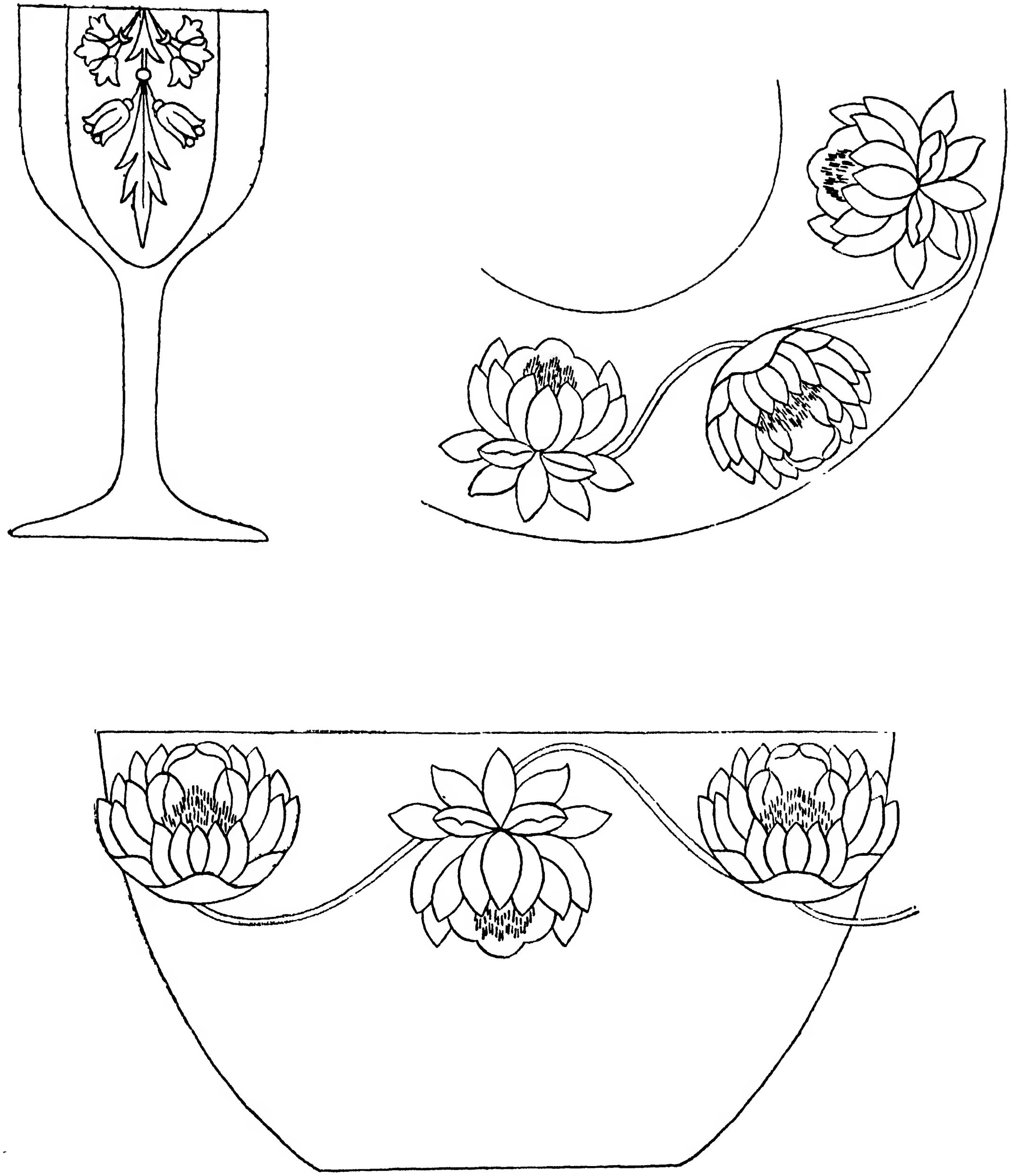
To transform the sketch into a "pounce," it is pierced full of minute needle-holes, following the lines of the design. A brush full of rather thick water colour, Chinese White preferably, is passed over these lines, the design being pressed or slightly gummed upon the glass, and the colour, penetrating through the holes, leaves the design upon the glass when the paper is removed.

The professional glass painter does not go to all this trouble; he spaces out and sketches his design upon the glass itself with a brush or pen and a little water colour; and if the amateur has, from practice in other arts, gained the requisite surety of hand and eye, he should certainly do the same.

The sketch is carefully gone over and outlined with brush or pen and a little enamel, and the piece then gets a first firing to fix this outline. On taking it out of the kiln it is cleaned with a brush of glass fibre, the enamel colours are applied wherever they are to show in any quantity, and the piece is again fired. The gold requires less heat than the enamels, and should be put on and fired after them. This makes three firings for a piece decorated with gold and colours.



Design 81.—Glass Painting. Tumbler Decoration.



Designs 82, 83, 83a.—Glass Painting. Wine Glass, Ice Cream Plate, and Finger Bowl.

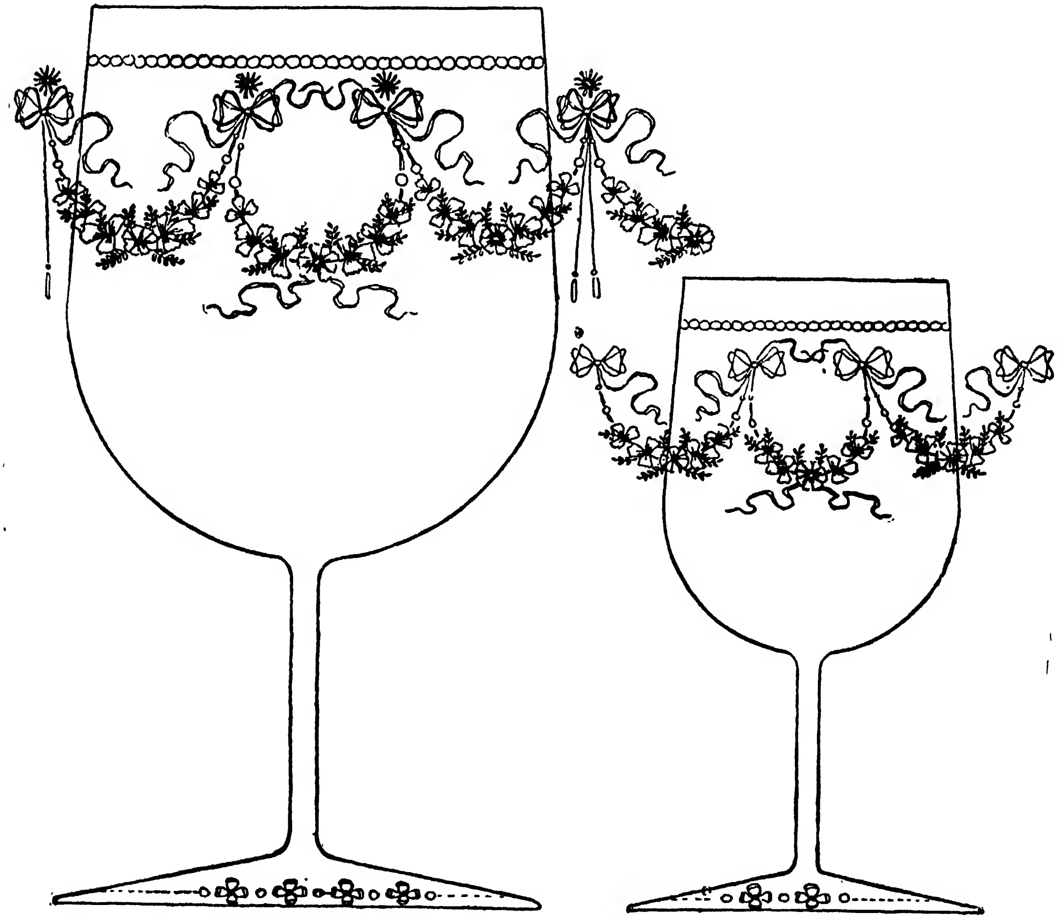
The stems and centres of the flowers of the water-lily designs are painted in raised gold, as is also the outlining of the petals. After the firing of the paste and gold, the petals are filled in with white enamel, which one must take care not to put on too thickly.

After each firing use the brush.

Special glass enamels must be used, not china colours. The best are the Austrian. They are sold in powder, and must be mixed with some oil to be ready for use. It is well to have your different mediums at hand —fat oil for mixing the enamel to a rather thick consistency, turpentine to thin it with and make it flow. Lavender oil (or, as it is often called, "spike oil," *huile d'aspic*, may be preferably used for the same purpose in very delicate work; and when a very thick paste of enamel or gold is to be applied for raised work, tar oil may be used. The latter, however, tends to discolour and dull both gold and enamel, and should be used only to obtain a ground to be gone over again, after firing, with a second application of the colour or gold mixed with some fat oil and turpentine.

Glass "Jewels," which seem too garish in contrast with the delicate surface of porcelain (see p. 285), are less out of place when used on glass, to which they more naturally belong.

Goblets, vases, lamp shades, and countless charming forms in glass of all kinds are available for this decoration.



Design 84.—Decoration for Table Glass. To be executed in Gold and Enamels.

MODELLING IN CLAY.

I. MATERIALS AND APPLIANCES.

OUR oft-expressed advice to the novice not to attempt this or that branch of the graphic arts without having acquired the rudiments of drawing need not apply to modelling in clay -at least in its first stages; for such modelling is natural drawing, and is wisely taught as such to very young children in the kindergartens. We need hardly say, however, that with a knowledge of drawing the serious student of sculpture will do much better than without it.

Lighting.—For modelling, the light is better coming from above than from the side. When only a side light can be obtained, it will be necessary, after working on one side, to remove the model so that the light may fall on the other; otherwise, if a likeness is aimed at, it will be perceptible only under one particular light, and from only one point of view. A good portrait should strike from every aspect. When working by gas oı candle light, the position where the light can come down upon the front of the work is best. It is most safe, where possible, to vary the position of the light either by shifting the light or the position of the model.

The Clay.—It is the fine, gray stone-ware clay that is wanted. It may be bought of the artists' colourman, in boxes of various sizes. For a bust, about twenty-five pounds dry weight are needed; for small objects, as a hand, foot, or panel of flowers, four or five pounds will suffice. If the clay is procured from a pottery, see that it has been well washed. If too dry, it must be soaked in water until of the consistency of dough; this result will be hastened by breaking up the clay.

The Tools really necessary are but few, although there is a great variety of shapes and sizes. The wonderful human hand is the best modelling tool of all.

Besides tools, you will need wires bent in round, oval, and triangular loops, and fastened in handles; and a board to model upon, strengthened so that it will not warp (see fig. 180).

If you wish to model a bas-relief, use an easel and set the board on it, having first put some nails in the board to support the weight of the clay; if your work is in high relief, carry wires from nail to nail.

To Model in Relief upon a plaque, it is a good plan to take a shallow jelly-cake tin or the cover of a paint-pail, and fill it evenly and smoothly with clay. Have a good outline drawing of your model. Lay the design upon the surface of the clay, which should be firm enough to take the impression as you trace the outlines with a pin or pencil. When you have traced the drawing, carefully remove the paper. Then scrape away the clay all around the outline to the depth of about one-eighth of an inch, and proceed to work up the design, keeping everything in the background as low as possible, and being most careful to leave no edges standing up in such a way that the wet plaster can run behind and interfere with the withdrawal of the mould. When there are such projections, it is necessary to make the mould in separate pieces, or to use a gelatine mould (to be described later on). Keep your tools clean during work by dipping them in a bowl of water. A soft inch-wide brush dipped in water will suffice to keep your work smooth.

When leaving the clay upon which you are working for the day, sprinkle it, covering it with a wet cloth, and placing it where it will be protected from evaporation. A good way is to turn a large tin basin over it. Experience will soon teach you how wet to keep the clay. If on returning to work it is found too dry, pour water over it until it has absorbed enough to be in good condition.

When you have finished modelling, and before making the mould, remove the work from the tin (which is very easily done), and place it on a newspaper, setting the whole into a basin.

For a model in the round it is convenient to have a zinc cover like fig. 183. It can be made of any desired size by a tinsmith. This cover being set over the model, with a bowl of water beside it, the exclusion of the air and the moisture rising from the bowl will keep your work soft and damp enough to be perfectly workable for several weeks.

II. WORKING FROM THE CAST.

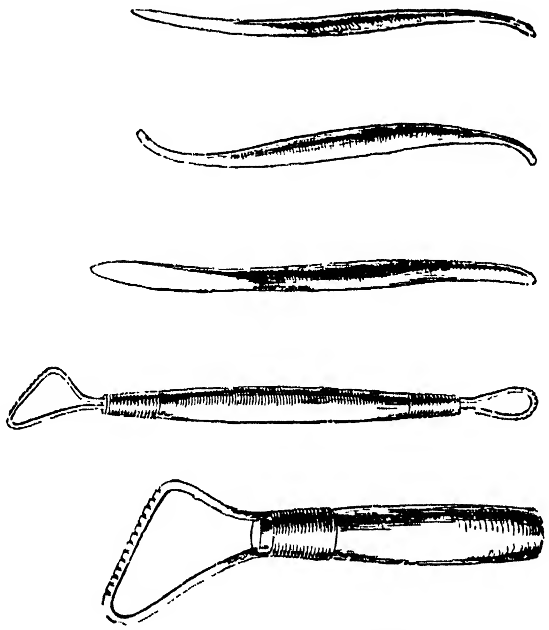
An inanimate model is the best for the student to begin with. In a living model a change is constantly going on in form and expression, and considerable training is necessary to enable one to cope with such conditions. A square, strongly marked cast of a hand or foot, however, affords an immovable as well as the most serviceable subject for first lessons in modelling; it can be bought at little cost, of any cast-maker.

Take a board of convenient size and put up the clay upon it, somewhat in the shape of the object to be copied. Measurements should be made to guide you in this. Whenever you are uncertain as to a proportion, measure it. Observe, first, the proportion of the width to the length, and block your subject in roughly, in broad, square planes or flats. In a foot, make one plane in the centre, from the top of the instep to the toes, then a simple, square plane on the outside and a broader flat on the inside: block the ankle in four planes, front, sides, and back of each toe in three planes, and so on. The study of the flats or planes in modelling is all-important, as it is the true secret of the mechanical principle of the art. The whole human figure, from the head to the foot, is composed of a series of flats, small or large, short or long, according to the proportions of the body. The first principle you have to master, then, in regard to your art, is expressed in the square cast of the foot or hand.

Different features of the face should also be modelled in the same way. Casts of the eyes, nose, mouth, and so on, can all be purchased for this purpose. In copying, be careful to block in everything very squarely, even exaggerating the planes. Try to be accurate in the measurements. A pair of callipers (fig. 184) will be a great aid. A correct measurement in a cast is like an outline in a drawing—it is the backbone of the work.

In beginning a face (keeping in view always the measurements of each part and the whole), observe carefully the flats or planes, blocking in the forehead first, the centre being about twice as large as the sides; the nose in three flat planes, one through the centre and one on each side; then one down the front of the cheek-bone, extending down through the chin, and one large broad plane from the termination of the cheek-bone or corner of the eye, extending backward to the ear and downward to the jaw-bone. After roughly blocking in the face in this way, the minor planes can be studied and put in.

Modelling a Bust.—In modelling a bust, proceed on the same plan, following the flats and planes, and working on the front and sides alternately, keeping always in mind the proportions in length and breadth and the relative masses.



FIGS. 175 179.—TOOLS USED IN MODELLING.

It will be necessary to have a revolving plinth to enable you to see your work from all sides and in all lights conveniently; a revolving office stool shortened to a convenient height, with a top provided of a heavy board that will not warp, is a capital makeshift for the regular thing (fig. 185). An upright piece of wood, with a short cross-bar to support the head and shoulders, must be fastened firmly in the centre of the top. The clay should be packed up as solidly as possible with a trowel into the rough semblance of the model. It is important that the core of the bust should be firm and compact, as the clay settles by its weight and the pressure of working on it. Some persons use glue water for wetting the trowel at this stage of the process. When you have the rough shape of the head and shoulders blocked to about the right size, commence with the features as seen in profile, carving out and building up until you have secured the correct outline, taking care that it comes in the centre of the face. Then turn the bust facing you and mould the features. It is well to have accurate measurements of your model, unless your eye is very true.

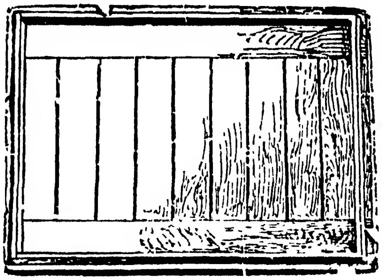


Fig. 180.—Board for Relief Modelling.

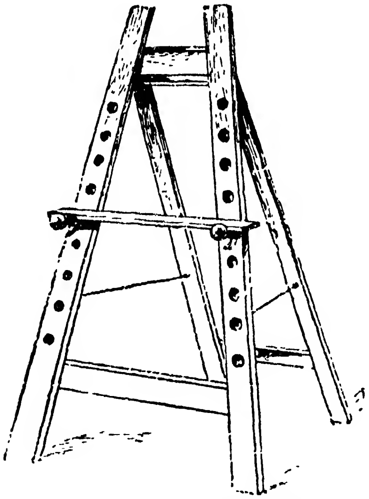


Fig. 181.—Easel for Relief Modelling.

A support that will serve can be made by fixing legs on a common sieve, so that it will stand over the bust without touching it. Over this a wet flannel cloth can be drawn down and fastened to the plinth, and the whole covered with a waterproof, or anything that will exclude the air.

III. WORKING FROM LIFE.

In modelling a bust from nature, place your sitter not less than six feet from you, so that you may see the whole head at one glance. If brought nearer, only portions of it can be seen at once, and one part ought never to be modelled without due reference to the rest, and each part should be advanced equally with the others. This rule must be kept constantly in mind, as it is only in this way that the harmony of the whole can be preserved.

The two sides of a head or face, when looked at separately, are generally found to be different in form. It is rarely that we see in nature a face that is in perfect drawing; but almost all have the appearance of being so, because of the fact that though the form may be different on either side, the weight is equally distributed, which gives the effect of harmony.

That it is useless to introduce details until the contour has been completed applies in every branch of modelling, and particularly in busts. As in map-drawing, if the countries are wrong, the introduction of towns and rivers will not make them right. Before introducing the mouth and eyes, be sure that the head is in proportion to the shoulders; that the width of the head is in proportion to its length. The nose may then be roughly indicated; after this the ears, whose position at the sides of the head should be determined from the nose, as the position of the ears varies in different heads. In some cases the ears are situated farther back from the face than in others, and sometimes higher up than in others. The opening or orifice of the ear is, in some heads, in a line with the lower part of the nose, in others it is as high up as the eyes. The place of the mouth should be judged of from the nose, and indicated near to, or distant from, the nose according to the length of the upper lip. The eyes, too, in some heads are set nearer to the nose than in others, and sometimes more deeply. The hair must be studied carefully in relation to its effect in contrast with the face. Study it in masses, always endeavouring to preserve the character of its movement, composition, and flow of lines. Do not attempt to copy it in detail: to do so would be most inartistic. You must not look for a likeness immediately. Pay attention solely to the proportions and balance of the masses and planes, and the portrait will come.

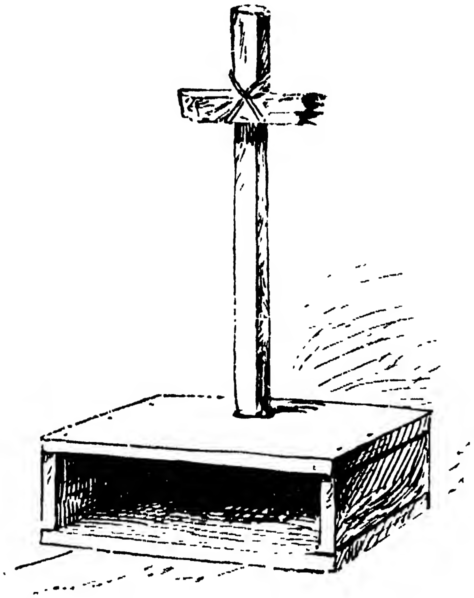


FIG. 182.—SUPPORT FOR MODELLING A BUST.

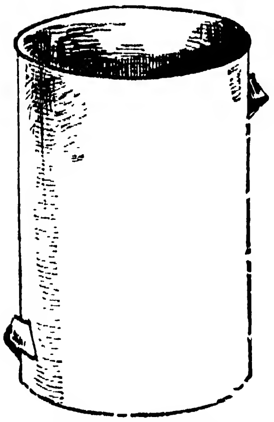


FIG. 183.—ZINC COVER FOR MODEL.

The Full-length Figure.—For a large figure it is necessary to have a plinth so arranged that it will turn freely on its rollers in spite of the heavy weight of the clay; there must be an upright iron post to support the body, and to this must be fastened supports for all the limbs and different parts of the whole figure. Plumbers' pipe answers admirably for this purpose, and braided copper wire for the hands and fingers. The services of an experienced person should be employed to arrange these complicated supports, for any fault in them will give serious trouble.

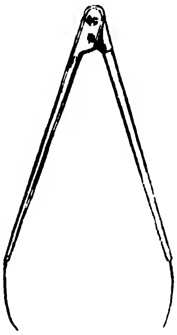


FIG. 184.—MODELLER'S CALLIPERS.

The Stand.—It is usual to model the bust without a stand, and procure the stand after the work has been cast in plaster. Stands may be had ready made.

In modelling the human figure, a knowledge of the external muscles will be of great advantage. This may be gleaned from anatomical figures. Plaster casts of these, ranging to about two feet high, can be bought. There

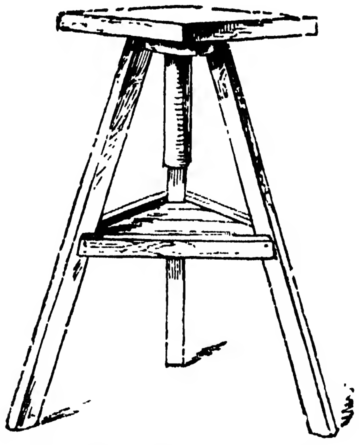


FIG. 185.—MODELLING STAND.

is a very fine reduction about this size, by Flaxman, of the Gladiator, which is most useful in the study of figure-drawing or modelling. In schools of art this is a favourite subject to copy.

In Modelling Draped Figures much attention is needed in the proper arrangement of plaits and folds. In drapery one particular fold requires another, where a graceful consistency is maintained, as much as a given position of the arm requires a particular disposition and elevation or contraction of its different muscles. The best draped studies are found in casts from the antique. In these the folds or plaits are represented by straight rather than by curved lines. Even where a fold assumes a circular form, it is effected in the best models, not by curved, but by broken straight lines. The zigzag strokes which occur in rough or unfinished sketches, whether drawn or modelled, have an artistic effect which is often lost or made to look mechanical where rounding off or high finish is attempted. In modelling, mere indications have often a more artistic effect than a studied roundness. Running lines, whether curved or straight, exist only in inferior works of sculpture, while in the works of the best masters these are carefully broken up, and arranged in such manner as to avoid offensive repetition. What is said here with regard to drapery applies equally to the hair, where balance should be maintained, but repetition avoided.

The Proportions of the Figure have already been considered (see Drawing from the Living Model); but in sculpture, following the general practice of the ancients, it is usual to allow at least eight times the length of the face (instead of seven) for the height of the body. We say "at least," for in cases where the effigy is to be viewed from an unusual altitude (allowance being made for the consequent foreshortening), more than eight times the length of the face is often allowed.

Taking eight heads as the standard, an idea of the proportion which the limbs should bear to each other may be inferred from the following numbers, which appertain to a figure measuring five feet ten inches from head to foot :- -

From ground to ankle ...	2	inches	7	eighths.
From ankle to knee	18	„	0	„
From knee to hip	19	„	2	„
From hip to collar-bone ...	16	„	6	„
From collar-bone to top of head	13	„	1	„
Length of foot, from heel to toe	10	„	5	„
Hand, finger-end to wrist-joint	8	„	3	„
Wrist-joint to elbow-joint ...	10	„	0	„
Elbow to shoulder	12	„	0	„

These numbers apply to casts from antique models of the most symmetrical kind.

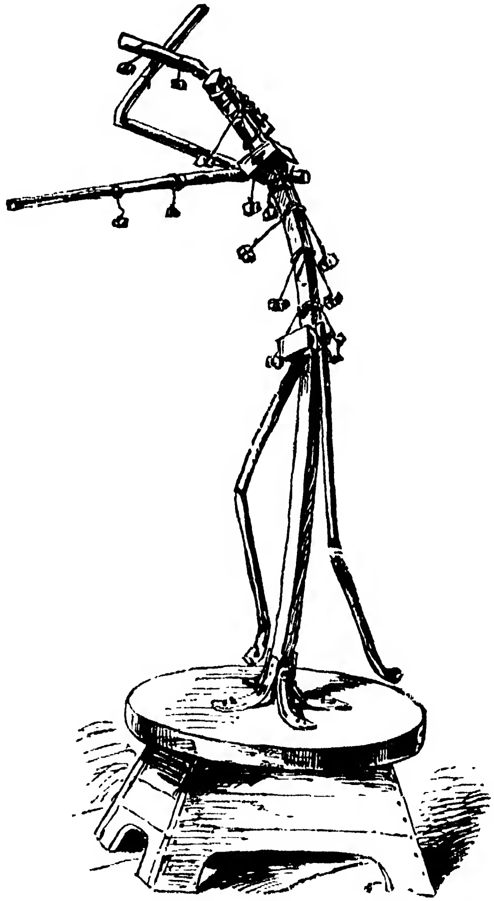


Fig. 186.—Support in Modelling a Statuette.

The following method of measuring is recommended to secure correct proportions: Cut a stick of wood the same length as the figure intended to be modelled, whatever its size may be; mark off the same into twenty-four equal parts, then number each part in regular order from end to end.

modelling clay. Be careful that the braided copper wire used for supports does not anywhere come near the surface, and that the work is very compact.

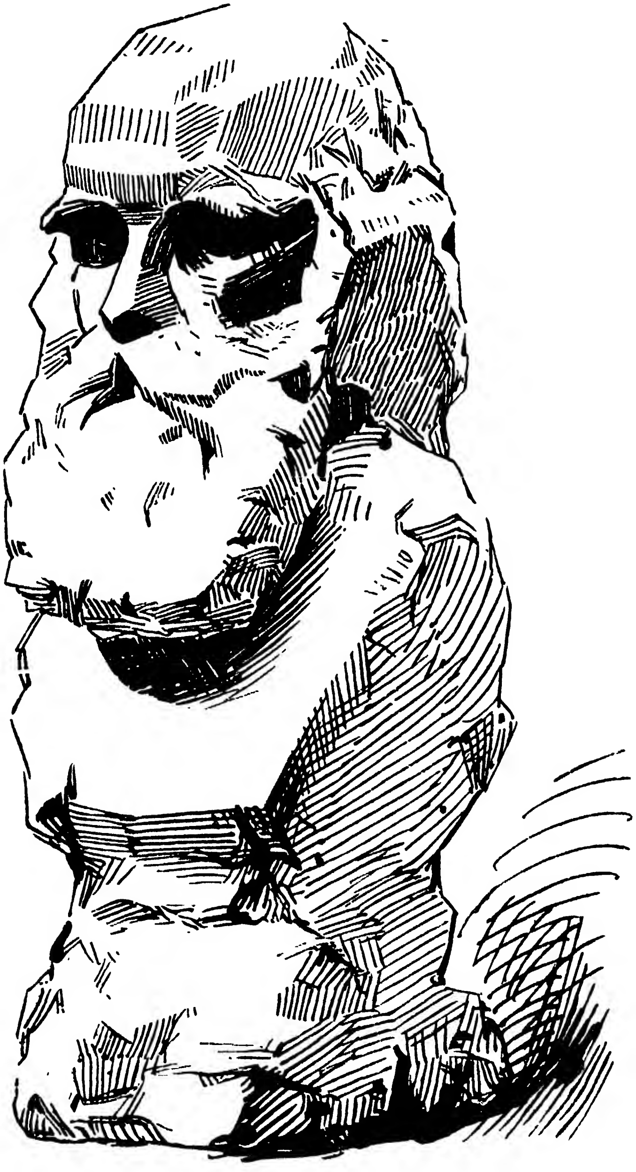


FIG. 187.—ROUGH CLAY SKETCH OF A BUST.

MODELLING IN CHINA CLAY.

For small figures made to be fired, use the best quality of china clay, which can usually be procured at the same price as the common

Tinted Clays.—Charming work can be done in tinted clays. If you live too far from a pottery to avail yourself of the special machinery that is used there for the incorporation of colour with clay, you must have recourse to the ordinary pestle and mortar, sparing no pains (while the colour and clay are in a powdered condition, as well as later, when the two have been made damp) to distribute the colour particles evenly throughout the clay by a thorough kneading. Experiment freely in these mixtures of clay with underglaze colours (see p. 290), sending them to a pottery for trial by fire before attempting serious work.

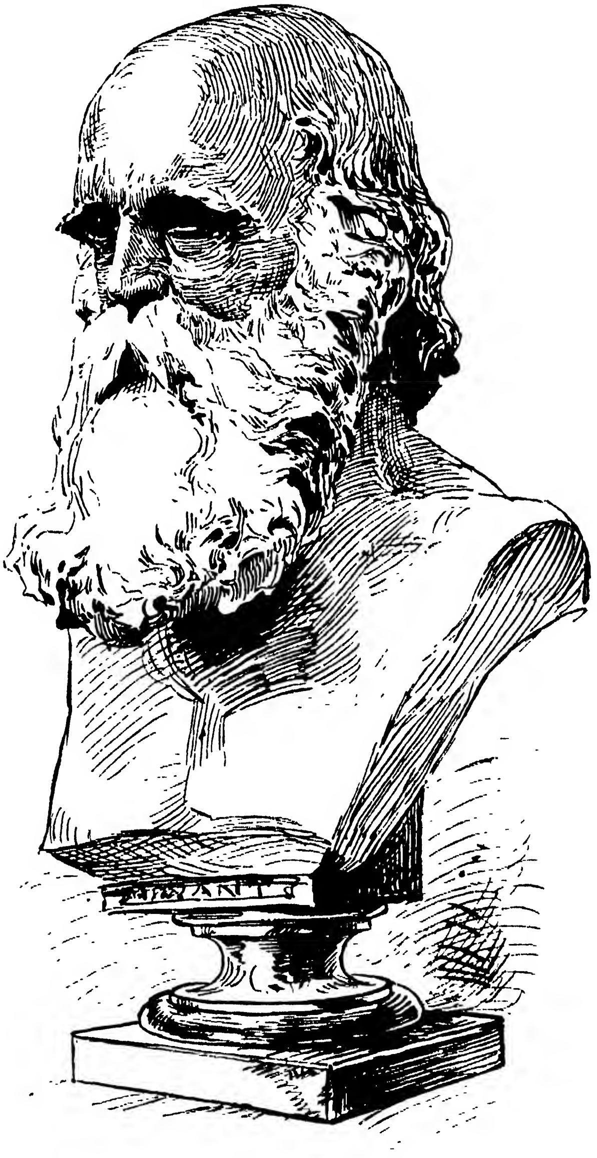
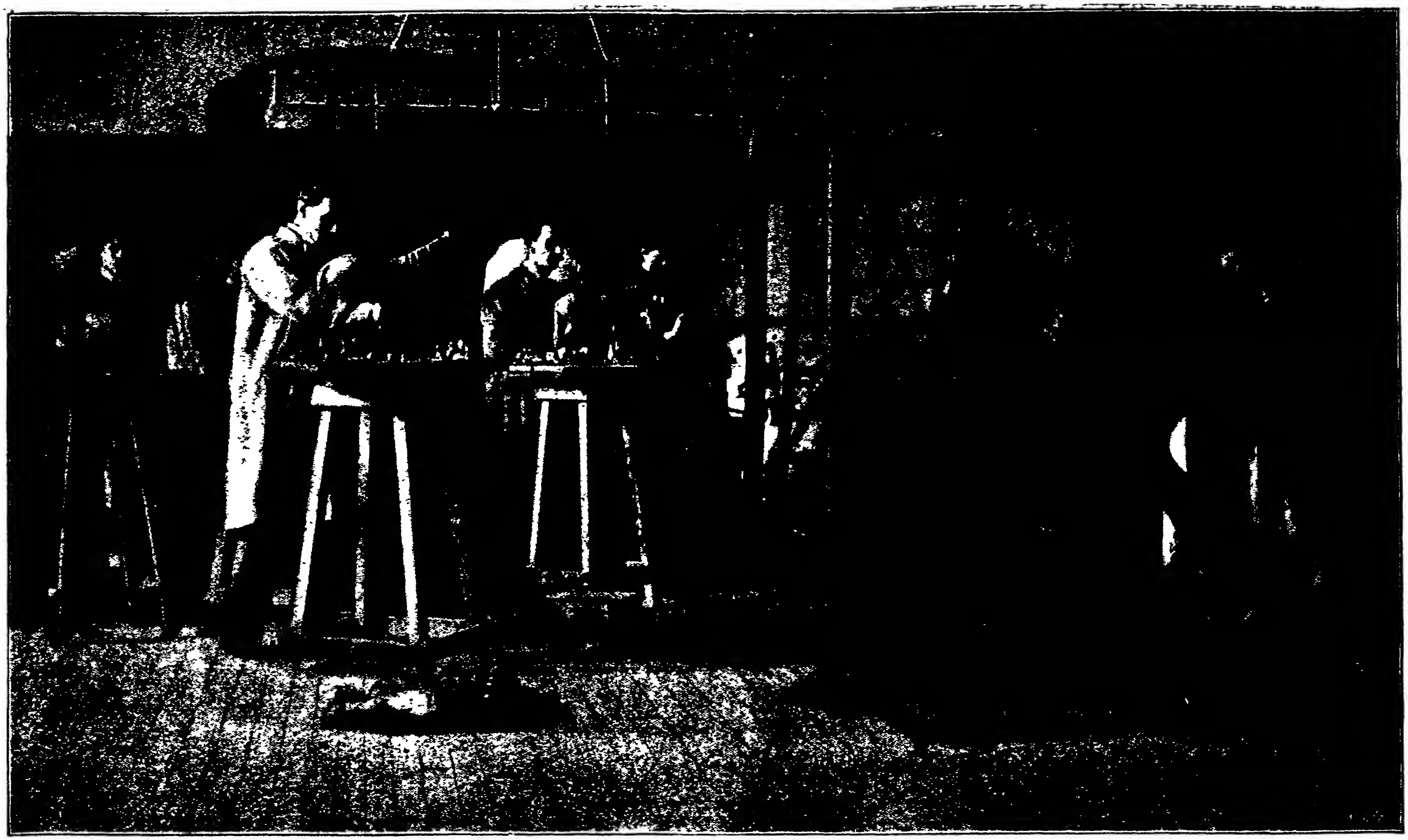


FIG. 187A.—FINISHED CLAY SKETCH OF THE BUST SHOWN ON THE OPPOSITE PAGE.

Medallions of symbolic figures, cupids, flowers, butterflies, doves, etc., can be prepared for insertion or as relief decoration in the following manner: Place in readiness a smooth



Animal Modelling from Life. Direct Photograph taken in the Class-room.

school slate, a roller, a pair of scissors, and a penknife, oil, water, gum-arabic or tragacanth, and a "slip" (clay and water mixed to a smooth paste).

Keep the prepared clays, one tinted, the other white, or of similar colour to the body of the object about to be decorated, in a damp condition by drawing over and around them several folds of wetted cloth.

Roll out a thin slab of tinted clay, and stamp or cut it to the required size; should it be sticky, insert a fine linen rag between it and the slate. Press it face downwards to insure a smooth, flat surface when it is required, and cover it with another wet rag.

For original work you will have previously made a model in wax, in low relief, of the forms about to be moulded in white clay and transferred to the tinted slab.

In this wax model you must avoid undercutting. Next, have cast from it, in plaster, an intaglio die; or, if copying must be resorted to, we will suppose that you have selected a subject from one of the small plaster medallions sold by the Italian street vendors.

If a single figure has been selected from a group, make an intaglio mould in plaster from the whole group, and fill up the hollows about the chosen portion while the plaster is wet, that the chosen figure or ornament may become isolated on a flat surface. A dried rush is closer in texture than the finest file. Pass this lightly over the face of your die to polish it before varnishing, and again after the varnishing, that no seam or puncture may appear on the tinted slab that is about to receive the white impress in relief. Make sure that the two clays being used are equally damp, to avoid unequal contraction in drying.

After pressing the white clay within the die (which must be oiled to prevent the clay from adhering to it), remove carefully, with a damp rag or clean brush, any particle that may have fallen upon the face of the die, before pressing the die upon the prepared slab. Press the slab into the position it is to fill while the die is yet attached to it.

If any instrument is used to assist in de-

DESIGN 85.—MODELLING IN CLAY. PANEL IN HIGH RELIEF, FOR THE DECORATION OF A FIREPLACE.

taching the moulded figure from its die, remove the evidence of the abrasion caused by it. Should it happen that the moulded ornament does not readily adhere to the slab, or the slab attach itself as firmly as required to its appointed place, mark lightly on the slab beforehand, by gentle pressure with the die on its surface, the exact position to be held by the applied ornament in white. Make one or two marks on the slab and on the mould that will enable you to fit them together again with precision. Roughen by scratching with a pointed tool the surface plan of the ornament on slab and mould, and paint into these scratches the prepared slip. Then repeat the process for attaching the medallion to its final position.

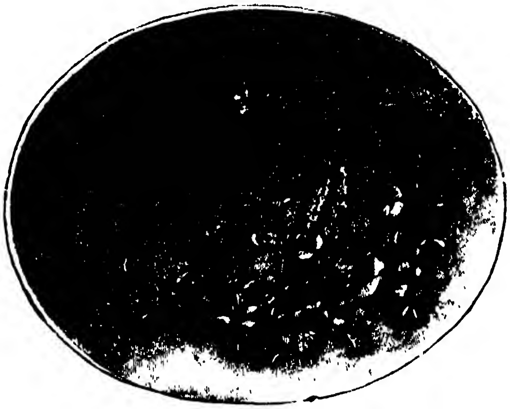


FIG. 188.—SIMPLE RELIEF MODELLING IN PORCELAIN CLAY.

The pressure needed to attach one clay to another should be applied evenly and firmly at every point. The skilled modeller adds delicate lines and touches, here a little and there a little, while preserving the general features obtained by moulding. In like manner, after transferring, for instance, the body of a flying cupid in low relief by the above process, a couple of butterflies in leash, or a spray of vine or flowers could be delicately modelled with the brush in white clay on the tinted slab, after the manner of raised work in china painting (see p. 279). The penknife or other tool, such as those used in wax modelling, may be had recourse to for sharpening the contours.

To relieve the hard effect of a round or oval slab, appropriate modelled or moulded wreaths, garlands or other ornament can be introduced at proportionate distances from the central slab. This class of modelling is usually kept free from overglaze, which is liable to blur its otherwise sharp, cameo-like appearance. An extreme nicety of finish is imperative.

A soft camel's-hair brush, dipped in water and drawn across a squeezed sponge, is used for the complete blending of the outer edges of the relief with the background. A few of the delicately carved bone or ivory tools used

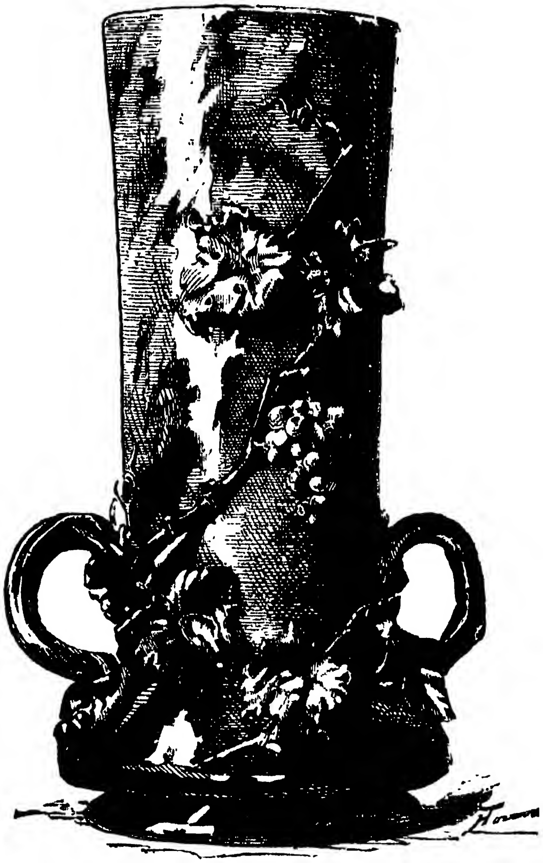


FIG. 189.—VASE IN SCULPTURED CLAY.

(By Messrs. Haviland & Co.)

by modellers in wax will also be of use. In skilled hands they work wonders in bringing out a light or a shadow by retouching. A smooth surface suffices for a background for well-moulded figures, though some kinds of ornament call for an "embossed" background.

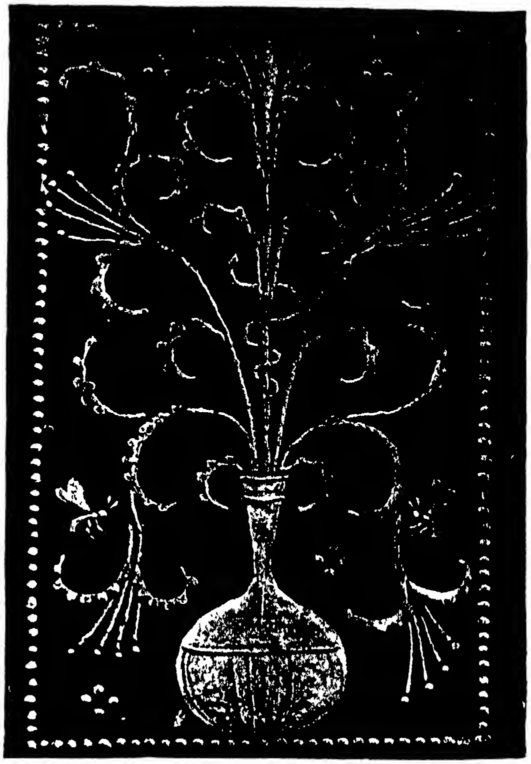
MODELLING IN WAX.

Wax for minute work, both in relief and in the round, is an extremely useful material, and when well prepared and coloured works easily and produces pleasing effects. In no sense can it, however, be made to supersede clay for more vigorous and large work. It has the especial advantage over clay of being clean to handle, and the work may be put down and taken up again at any time without injury to the material—which does not require frequent wetting, like clay. A medallion, for instance, may be carried about in a box in the pocket, and taken up for working on at odd moments.

Modelling Wax.—The ordinary kind—it may be bought of any artists' colourman—is made in the proportion of 8 oz. yellow wax, 1 oz. Burgundy pitch or white (not spirits of) turpentine, and ½ oz. lard, melted at a low heat, so as not to bubble, the ingredients being well stirred in, and red lead, in powder, used to colour it. When perfectly mixed the wax is turned out on a slab to cool.

The best recipe, perhaps, is as follows: 1 lb. yellow beeswax, 1 oz. Venice turpentine, 1 oz. Burgundy pitch, 1 oz. white lead, 1 oz. yellow ochre (dry powder), 1 oz. powdered corn-starch, ½ oz. tallow. A little red lead may be used as colouring-matter. A perfect mixture, with heat as described in the previous recipe, is necessary. If the compound comes out too hard, a little more Burgundy pitch and tallow may be used to soften it.

"Composite Clay."—For small statuettes and all ordinary work of the sort there is an excellent composition, made mainly of fine modelling clay, mixed with lard and other ingredients. This may be obtained so cheaply and of such good quality of dealers in the ordinary modelling clay that it is hardly worth while for the student to experiment in making it. It is known as "composite clay." It has some of the qualities of putty, in that it gets soft by the warmth of the hand, and hardens again on cooling, but it does not stick to the fingers and does not crumble. It has the advantage over clay of not requiring to be kept wet and of keeping its shape for any length of time, and over wax of being unaffected by ordinary changes of temperature and of being workable with ordinary tools. The finer work in wax has to be done with iron tools heated in the flame of an alcohol lamp



Design 86. Modelling in Gesso. Panel by Walter Crane.

Composite clay may be procured of two qualities, hard or soft; the harder sort being that best adapted for very fine work.

MODELLING (PAINTING) IN GESSO.

Gesso of the old-fashioned kind is a preparation of whiting and size, resembling putty. Employed as a painting ground by the old masters, it has been revived as a most convenient material for modelling in low relief—or rather painting; it attaches itself to any kind of surface, and is delightfully pliant. A firm foundation is absolutely necessary. Wood, plaster, or canvas will do. For fine work wood is best. Simple as it is, gesso is an artist's process.[1]

A smooth surface having been laid with gesso and allowed to become dry, the design may be transferred to its surface by pouncing or by use of stencil plates, or else drawn directly with a lead pencil. Wood mantels, panels of clocks or other decorative pieces of furniture and vases are particularly suitable for treatment. Designs are often executed on coarse canvas, and panels of doors and over-doors and spandrels of arches filled in with them. Frames of mirrors used as sconces are sometimes very effectively decorated in this way in low relief. They may be bronzed afterwards.

Two preparations of gesso which have been found to work may be described. The first is very simple, and is a mixture of fine Italian plaster of Paris and glue. Dilute the glue with hot water, then mix with the plaster until it is of the consistency of cream; a little glycerine added will prevent shrinking and cracking. Lay a coat of size or of thin lacquer on the panel or canvas before going to work. The second is a much firmer and harder gesso, and is made by boiling one part powdered resin, four parts linseed oil, six parts melted glue. Mix the whole well together. Too much care cannot be taken with this latter mixture. Soak whiting in water, and add it to the prepared mixture until it is also of the consistency of cream. The quality of whiting is to be varied or modified in proportion to the degree of fluidity required in the character of the work. The second mixture has many advantages over the former. It is slower in drying, giving one more time for final finish. It is better for delicate work. It sets more firmly, and takes a finer polish when hard. Combined with Naples Yellow, it bears a great resemblance to ivory.

In England painting on gesso has been largely applied to the enrichment in relief of walls and ceilings of mansions, and this in many instances by young ladies both as amateurs and professionals. Walls and ceilings are divided into panels formed also in gesso, a trailing flowering plant often being very suitable for the purpose, while the frieze may be formed of processional figures or scrolls and leafage. Meandering tendrils in the Louis Quinze style, delicate and lightsome, are excellent for divisions of ceilings. Wall panels may have corner-pieces and central figures, but they also admit of large and imposing tableaux, for there is no limit in the way of relief work in gesso. Abundant pictorial designs may be met with in metallic relief plaques, in carvings, engravings, and in porcelain and faïence statuettes. For the chief masses of the design, it is best to lay on at the outset the whole amount of material required, thus saving time and labour in the shaping.

Water colours are preferable to oil colours in painting the relief work; for these no preparation of the ground is necessary. Oil colours require the previous laying on of a coat of shellac. For gilding, a thin coat of oil gold size is to be laid on.

But of all the finishes employed, and the special feature of the revival of the art, lacquers of various colours prepared for the purpose are the most beautiful. These metallic lustres give a unique effect to the finished work, recalling Limoges enamels.

PLASTER CASTS.

I. FROM THE CLAY MODEL.

To make a plaster cast, first prepare a quantity of plaster mixed with water to the

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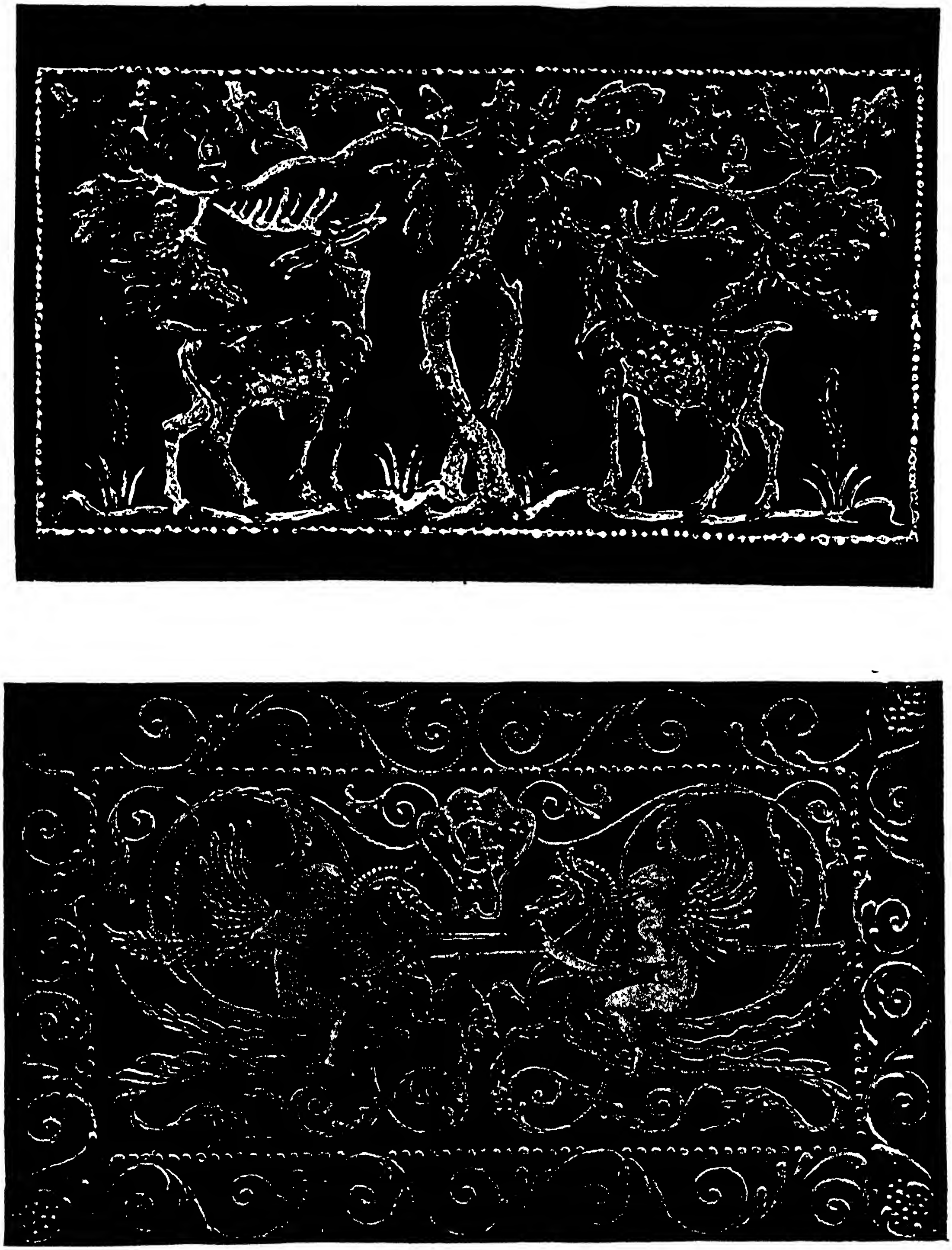
[1] At the exhibitions of The Arts and Crafts, Sir Edward Burne-Jones, Mr. Walter Crane, and Mr. Spencer Stanhope have been notable contributors in this form of decoration.



Designs 87, 88.—Modelling in Gesso. Panels by Walter Crane.
Photographed from the Original Work.

consistency of a thick cream. Apply this little by little to the object until the plaster is of the proper thickness—a quarter of an inch or more, according to the size of the piece. The plaster must be kept stirred from time to time, to avoid the formation of lumps and bubbles. If the object is a complicated one, such as a group, it is best to cut the clay or wax model into simpler parts with a fine wire, and mould each of these separately; otherwise there may be great danger of breaking. But each portion before the group is taken asunder should be marked, so that it may be easy to adjust the various pieces of the cast in their proper places; or the same end may be attained in simpler pieces without cutting the clay, by stopping off the plaster along certain lines with bands of wet clay dusted with dry plaster, so that they may not stick too much to the figure.

Thus a bust may be moulded in two sections, dividing it by means of a clay band running from the top of the head, behind the ears, and down the neck and shoulders. When the front half has been moulded, the band is taken off and another supplied exactly on the other side of the dividing line. The liquid plaster is applied with a brush. When it reaches a thickness of a quarter of an inch it is well to apply a thin coat of wet clay, so that in breaking up the mould, as will be explained presently, you may know when you are approaching the proof within. Outside the clay the plaster may be put on thickly, and as much of it as may be judged necessary to make a solid mould, which may be further strengthened by encasing lengths of iron or copper wire in it, running in various directions. The wires should be varnished. Lengths of hempen thread or twine are often used instead.

The two parts, as we will suppose, of the first mould having been obtained, they are coated on the inside with soap water—that is, black soap dissolved in hot water, boiled and well skimmed. This is to prevent the plaster from absorbing too great a quantity of olive oil, when a proof is to be obtained. Two coats of oil are, nevertheless, often necessary to prevent the plaster of the proof from adhering to that of the mould. This done, each part of the mould is well coated with plaster on the inside, the two are brought together, tied firmly, and left for twenty-four hours. The mould is then chipped away with chisel and mallet, the couch of clay enabling the worker to knock off the greater part of it without endangering the proof within. The clay is picked off with the fingers, and then the inner coating is removed with very great care.

You now have a cast of your original clay model; but for all your care it will, very likely, be imperfect in places; besides, it is only one cast, and you need a set of moulds from which you can take any number of casts. Again, the white plaster discovers slight defects of modelling which may have passed unnoticed in the clay. This first proof may therefore be considered pretty much as a sketch, to be further worked upon and corrected. This is done by applying wet plaster wherever needed with a brush, and working upon it when dry with the steel tools, chisels, and files, used also by the sculptor in marble. Very much may be done in this way which would be difficult or impossible in the clay.

The moulds of the second set, made from the finished proof, are not intended to be broken. They are therefore made in many pieces, which may be detached one by one without danger of breaking. Thus a mask may be divided into as many as a dozen pieces, each side of the nose being moulded separately, each cheek, the hollows under the eyes, the chin, the ears, the forehead in three pieces. Each section, being outlined on the first proof, is oiled (the proof having first been treated with soap water), and the plaster is put on as before, only thinly. The piece thus obtained is trimmed at the edges, oiled, reapplied on the proof, and then the plaster is applied on the pieces next to it, coming, of course, exactly up to the edges of the first. These pieces are firmly tied together for the casting, which proceeds as before, but which should result in a perfect cast when the different pieces of the mould are carefully picked away from it. Lines will, however, often show in relief on the cast at the junctures, and these have to be carefully removed, and the surface made even with emery paper.

II. FROM LIFE.

To make a plaster cast from the life is a matter of some difficulty, because it has to be done quickly. The skin must be well oiled, so that the plaster will not adhere to it; in the case of a hirsute male model, it is even well to use butter or oleomargarine, and to apply it somewhat thickly. In taking a mask of the face, mouth and eyes must be kept closed, and the nostrils must be stopped with wax, through which quills are inserted for the model to breathe through. An arm must be well supported at the wrist and elbow, for the weight of the plaster is considerable, and the special difficulty of the work is due to involuntary movements of the muscles trying to adjust themselves to this weight, which causes the plaster to slip. For the same reason the more quickly the work is done the better.

To make the plaster set quickly, mix some powdered alum with it. Common salt would do, and its use is sometimes recommended; but it adds to the adhesive property of the plaster, and more oil or grease must be used, which makes it impossible to attain the natural texture that a cast from the life should have. You must decide quickly about the number and shape of the pieces into which the shell is to be divided, so that it may be withdrawn easily from the model. A waxed silk thread is to be used for cutting; but since the shell cannot be made very thick, breakages frequently occur, and much skill is necessary in putting together the pieces of the mould in order to get a cast from them.

The interior surface of the mould must be coated with shellac to render it less absorptive, and must be freshly oiled before using. It is useful, in addition, to mix a little colour in the plaster that is prepared for the cast, so that if even a trace of it adheres to the inside of the mould it will be detected, in which case it is to be carefully removed with a sharp penknife blade, and adjusted in its proper place on the cast; for, as before said, the special beauty of a cast from life is in its natural surface.

A very slight addition of yellow and red ochres in powder will give something like the warm hue of flesh.

Everything depends upon the quickness and upon the thorough mixture of the plaster. Plenty of it should be in readiness, and it should be mixed as thickly as the water will hold, leaving just an inch or so of water at the top of the bucket.

III. GELATINE MOULDS FOR PLASTER CASTS.

Gelatine moulds are made of small objects, for the purpose of avoiding the trouble of having moulds in several parts. The object moulded from, whether of plaster or other material, should always be oiled. It may then be dipped in a solution of gelatine, and when the coating has solidified, other coats may be applied by a brush until it is thick enough. It is cut with a sharp knife in order to remove it; but, as it is elastic, it need not be cut into separate pieces.

If you have never watched the process, you may find it difficult to make a gelatine mould from printed directions, but we trust that the following hints will be found helpful: Soak one pound of gelatine in water until it has absorbed as much as it can, which it will do in four or five hours. Then apply a gentle heat until it is thoroughly liquefied. If you want an elastic mould, add four and a quarter ounces of treacle, which must be well mixed with the gelatine while hot. If you want a solid mould, omit the treacle and add powdered chrome alum—an ounce to an ounce and a half. The alum prevents the gelatine from being again dissolved in water. If a saturated solution of bichromate of potash be brushed over the surface of the mould and allowed to dry thoroughly, then exposed to sunlight for a few minutes, the mould will become so hard as to be unaffected by water.

WOOD-CARVING.

I. CHIP- OR NOTCH-CARVING.

WOOD-CARVING is easily learned, the tools and materials are inexpensive, and the articles decorated not only can always find a place in the home, but are often saleable.

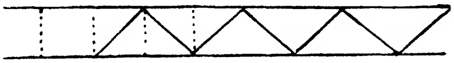


FIG. 190.

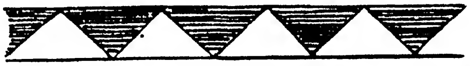


FIG. 191.

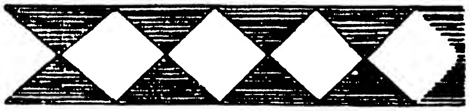


FIG. 192.

Fig. 190 shows how to set out a row of right-angled triangles (fig. 191); they are doubled in fig. 192, to form a row of diamonds. Make them the size shown: for, at first, it will be found easier to cut the wood sharply from a small space than from a large one—as in fig. 194, for instance.

Modelling in clay or wax is an excellent, and indeed almost necessary, preparation for the higher branches of carving: carving is only sculpture in wood. Chip- or notch-carving is the most elementary form of wood-carving—the "whittling" of our boyhood.[1] To be more precise, chip-carving consists of ornamenting wooden surfaces usually, but not necessarily, flat, by cutting various-shaped notches to form a geometrical design. The notches are nearly always made on the slant at the same angle, so that they meet at the base in the form of a V, varying in size and depth according to the requirements of the design.

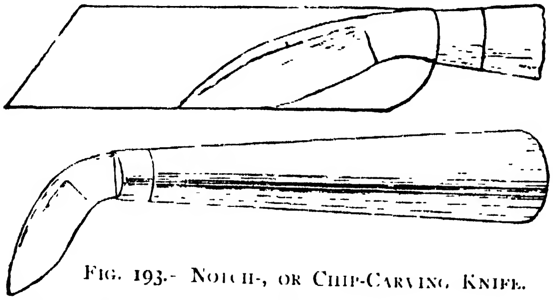


FIG. 193.—NOTCH-, OR CHIP-CARVING KNIFE.

Excellent work may be done with one simple tool: a hook-bladed knife, made by grinding down an ordinary shoemaker's knife, and setting it in a longer handle, will do.

Chip-carving is so simple that little children in the kindergartens learn to do it easily. It entails no mental strain or fatigue, nor apparatus or preparations. No workman's bench is required, nor, except for the flying chips, is there any suggestion of the workshop; you may sit at the table in the common living-room and whittle away without noise or annoyance to those about you.

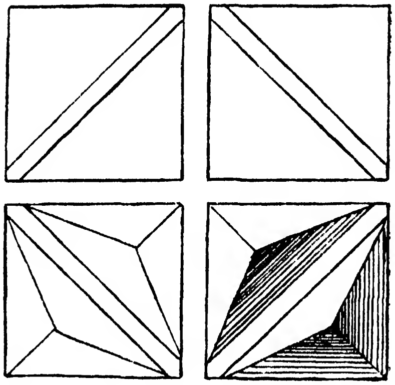


FIG. 194.—ELEMENTS OF CHIP-CARVING.

The notches are nearly always made on the slant, from opposite directions, at such an angle that they meet at the bottom, and form a V-shaped cut.

The peasants of Norway and Sweden, who produce wonderful decorations by simple notch-carving, generally use an ordinary pocket-knife. A hook-bladed knife, something like a small pruning-knife, is a favourite implement. But there are the easily obtained tools of the professional wood-carver, and it is well to begin at once to learn how to handle them. With a small V, or parting, tool, and a veiner, you are equipped for all ordinary work. If you intend to make your own designs—and in that lies much of the pleasure of the chip-carver—a knowledge of at least the elements of geometry

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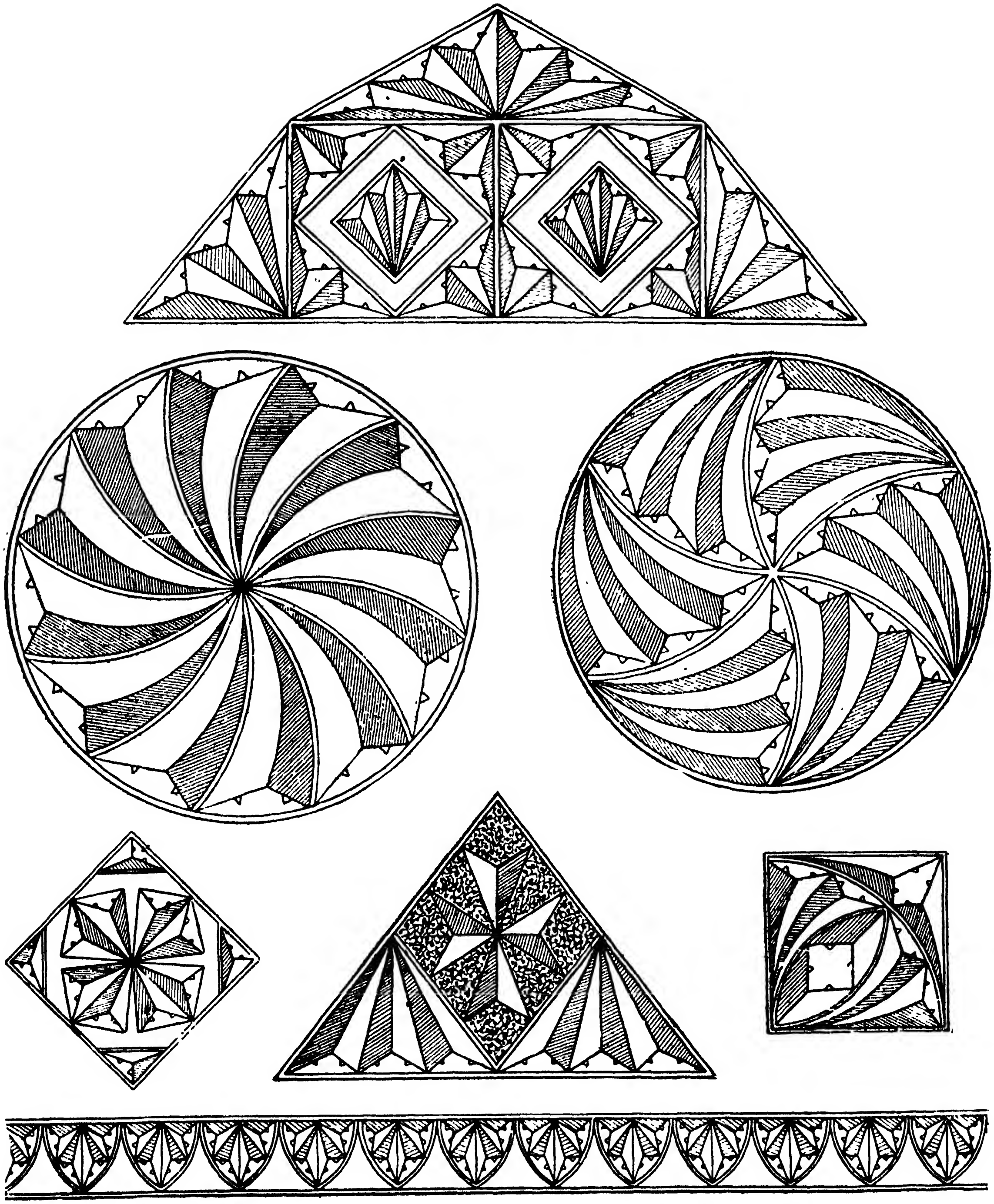
[1] It is to be borne in mind, however, that wood-carving proper is so much bolder and larger than chip-carving that it may be said to be a different art. For this reason some teachers believe that instruction in wood-carving should precede chip-carving, which can easily be learned afterward.



Figs. 195-201.—Motives and Designs for Notch- or Chip-Carving.

The little "nicks" indicated in the drawing (usual in German work) are not necessary to the designs, and may be omitted altogether. In the opinion of many, they are a trifling attempt at ornament which detracts from the simplicity which should characterise chip-carving.

is necessary, and you should be handy with rule, set square, and compass.[1]

Wood.—The most suitable woods for general purposes are lime and holly; pear, walnut, and plane are also good. After some practice, oak will be available; it is too hard for the beginner, who would do better to go rather to the other extreme and use American white wood for his first attempts, although that will be found too soft for serious work.

The wood must be well dressed and made perfectly smooth with the smoothing-plane. Do not use sandpaper, for particles of sand are apt to lodge in the grain and injure, later, the edges of the tools.

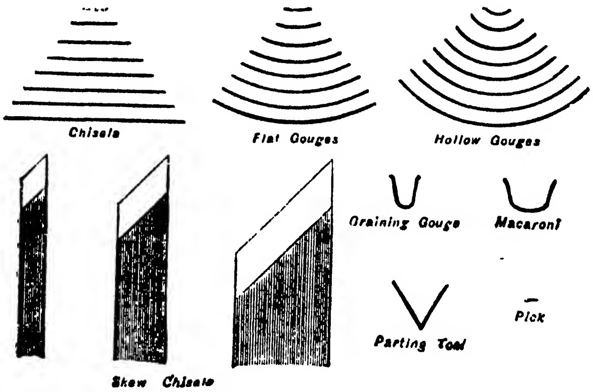
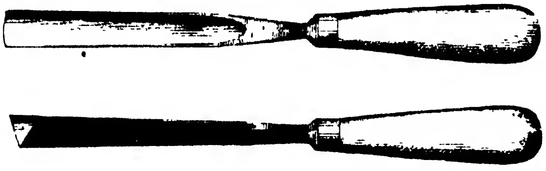


FIG. 202.—MARKS OF VARIOUS TOOLS USED IN WOOD-CARVING.

For a First Attempt select a strip of (half-inch thick) white wood about nine inches long and six wide. Clamp it to the edge of the table to hold it firm, and use a strip of thin wood—a piece of a cigar-box would do—between the clamp and the wood, to avoid scratching.

Let each cut into the wood be clean and complete. Cut boldly from the outline to the centre—never from the centre to the outline—and always uniformly at the exact angle. Curved notches are more difficult. Whatever the notch, the desired depth should be reached by a single cut. To cut a second or, worse still, a third time will produce a slovenly effect; and although irregularities caused by bungling may be rectified by subsequent paring, evidences of the corrections will be more or less apparent.

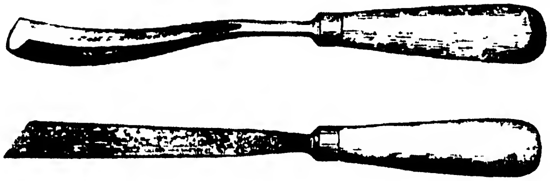


FIGS. 203, 204.—WOOD-CARVING TOOLS. V OR PARTING TOOL AND FLAT GOUGE.

Among the various objects for domestic use which may be decorated with chip-carving may be mentioned book-racks, newspaper-racks; mirror, photograph, and other picture frames; bread-platters, tea-trays, flower-pot stands, clock-cases, barometer-frames, blotters, and paper-knives. Be careful not to decorate too great a part of the object in hand. In all good decoration the ornament is the more valuable the more it is brought in contrast with considerable plain surfaces.

Finishing.—After the carving is done, sandpaper the surface of the wood not decorated—but not the notches. From the latter remove the dust that will have accumulated, using a stiff brush for the purpose.

Polishing.—Do not varnish the work—it will give it a common look; to oil soft wood causes it to catch the dust. A dead wax polish is preferable. For this, use warm beeswax in turpentine, and rub the mixture over the carving with a woollen rag.



FIGS. 205, 206.—HOLLOW GOUGE AND FIRMER OR FLAT CHISEL.

Perhaps there is not very much art in chip-carving; but it teaches accuracy of observation, precision of touch in handling the tools, and how to work freely from the wrist—all valuable qualities for the practice of wood-carving proper, which we will now consider.

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[1] In Miss Eleanor Rowe's "Manual of Chip-Carving" (R. Sutton & Co.), which we can cordially recommend, much attention is given to the geometrical side of the subject.

II. TOOLS AND APPLIANCES.

It is best for the wood-carver to have a small outfit of tools at first, and to master the use of each tool singly, finding out everything that can be done with it. It is not with the elaborate "set of tools" with finely polished handles, in a beautiful box, that the best work is done. These are made especially for amateurs, but we advise amateurs to have nothing to do with them; for, as a rule, they are only toys. Buy the tools made for professional carvers. The following will be sufficient, for a beginning at least: one nine-sixteenth and one five-sixteenth firmer or flat chisel; one six-sixteenth corner chisel or skew; a nine-sixteenth and six-sixteenth flat gouge; a six-sixteenth hollow gouge, and a three-sixteenth V, or parting, tool. You will also need a slip of oil-stone formed to fit the concave tools; a mallet, and a pair of coachmaker's iron clamps, No. 14; a little oil, and a sheet of black transfer paper.

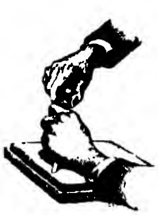


FIG. 207.—POSITION OF THE HANDS.

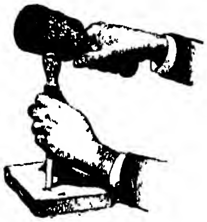


FIG. 208.—THE HANDS IN USING THE MALLET.

The Transfer Paper is not an expensive item, but you can make it for yourself by mixing lampblack and castor-oil to form a thick paste, and then applying it to one side of a piece of newspaper, gently wiping off the surplus grease with a piece of rag.

The Carver's Bench may be a strong kitchen table with a stout pine top. In this case the legs should be secured to the floor with small iron brackets, to ensure rigidity. The drawer can be used in place of a tool chest.

For those who would prefer to have the regular carver's bench, we would say that it should not be less than 4 ft. 6 in. long, 2 ft. wide, and from 2 ft. 6 in. to 3 ft. high. The legs should be of pine, 4 in. square, with cross pieces of the same size, dowelled and fastened with what are known as lag screws. The top should be of pine about 2 in. thick, perfectly level and well seasoned, and on the front edge should be fastened, by means of the lag screws before mentioned, a piece of pine 3 in. square, having slots 1½ in. long by ¾ in. deep, cut out on the inner side. A thin piece of pine should be nailed along the back and continued along the ends for about a foot, and projecting 1½ in. above the top of the bench, to prevent the tools *from rolling off.*

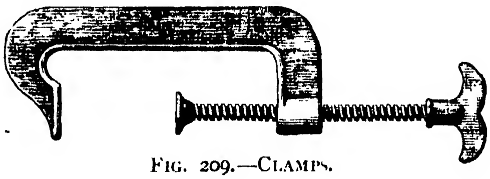


FIG. 209.—CLAMPS.

The Tool Chest is usually made with three shallow top drawers for holding spare tools, slips, etc., and a large bottom drawer or cupboard for odds and ends.

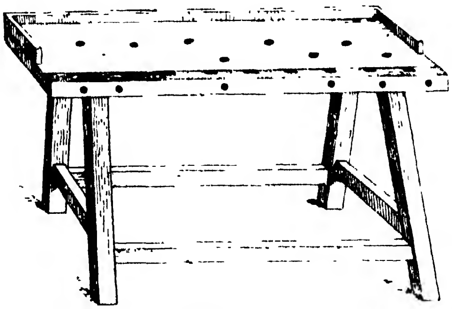


FIG. 210.—A WOOD-CARVER'S BENCH.

"Holdfast" and "Bench Screw."—The means adopted for fastening the work to the bench vary, but most professional carvers use either a "holdfast," a "bench screw," or "bolts"; and although these articles are not perhaps absolutely necessary for the amateur carver, they are of sufficient importance to merit more than a passing notice.

The "bench screw" is more useful and less clumsy than the "holdfast," and answers the same purpose. This appliance, however, is only suitable for certain descriptions of work which are not too heavy.

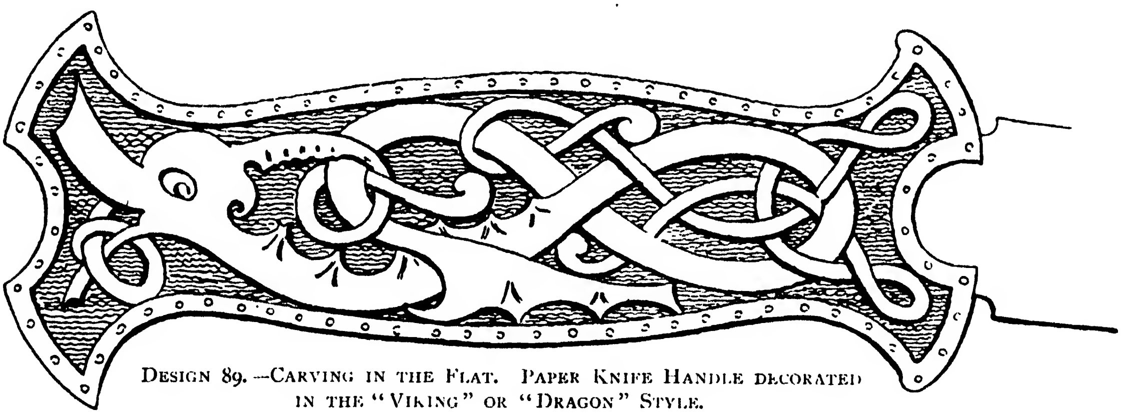
"**Bench Bolts.**"—The best contrivances are the "bench bolts," consisting of two pieces of steel 10 in. long, 1¼ in. wide and ¾ in. thick, to fit into the slots in the edge of the bench. A spring on the side prevents the bolts from slipping, and the projecting heads allow work of almost any size to be securely and firmly fixed; the screw through the head of one of the bolts affording means of at once releasing or tightening the work.

With our modest kitchen table and coachmaker's clamps—which are all that is necessary, at least for carving small articles—we will dispense with all these appliances.

III. PRELIMINARY PRACTICE—CARE OF TOOLS.

Take a board of common pine, about 16 in. long, 10 in. wide, and 1 in. thick, and fasten it firmly to your table by means of the clamps. Rule a few straight lines from end to end of the board ⅜ in. apart. Take the hollow gouge and hollow these spaces out, holding the handle of the tool in the right hand, keeping the wrist almost down on the wood, and with the thumb and forefinger of the left hand—or the whole of the hand, which is sometimes necessary—guiding the tool and pressing gently, go slowly along, and you will remove a thin, curled shaving. Try to cut these shavings of even thickness, in a uniform, straight groove. Do not move the tool from side to side in the wood. The beginner is very apt to do so when the tool does not glide easily—it is a bad habit to acquire.

When you have succeeded in cutting several of these grooves, straight, and uniform in width, rule lines for similar grooves across the grain. You will find them harder to cut, for the tool will meet with more resistance; but after a few trials you will succeed.


Design 89.—Carving in the Flat. Paper Knife Handle decorated in the "Viking" or "Dragon" Style.

Now turn the board over, make a few circles, and gouge them out around the outside edge. This will be more difficult still, but from this practice you will soon become familiar with the use of the gouge.

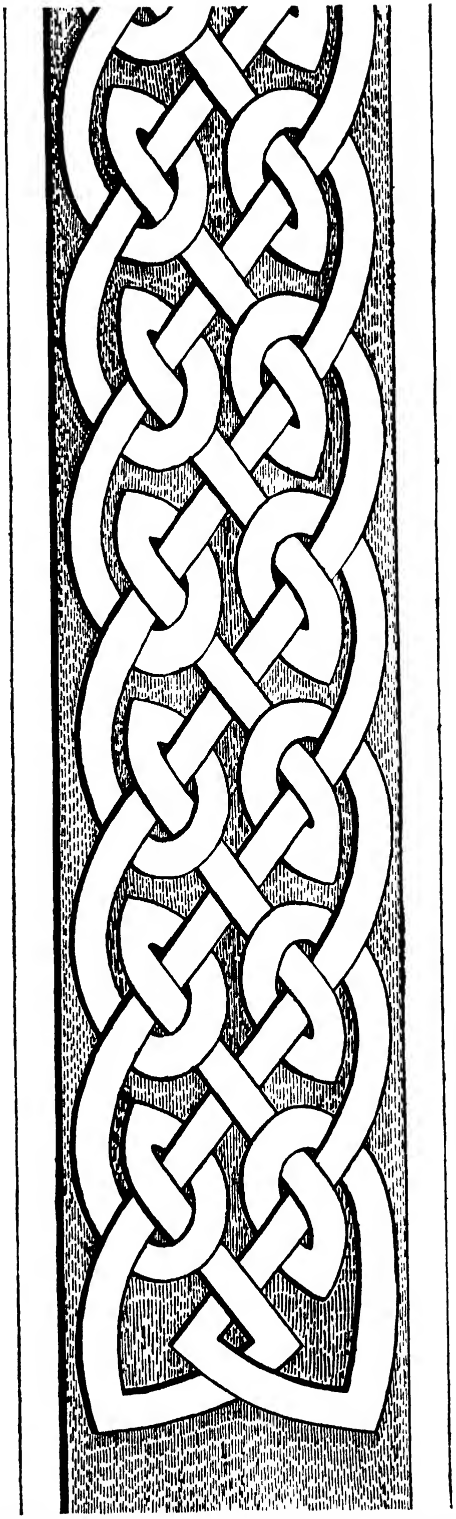
By this time it will have lost something of its sharpness, and it will not be out of place to give here a few hints about

Grinding and Setting Tools.—Chisels are ground on both sides to a long, thin wedge—that is to say, about a quarter of an inch of the flat surface is bevelled toward the cutting edge. Gouges are held to the grindstone at an angle to make a bevel of about a quarter of an inch on the convex side, on which side they are always ground. This is perhaps the most awkward task for beginners. To sharpen a gouge properly requires much care and practice, as a gouge correctly sharpened should have a perfect curve.

The line formed by the cutting edge, as well as the bevel, should be carefully preserved. To secure this the tool should be constantly turned from side to side while grinding, without being lifted during the process. The tools are now given their keen cutting edge by gently rubbing them backward and forward on the oil-stone at the same angle at which the tool is ground. Do not press too hard, or you will have a jagged edge like a saw. In setting tools you should turn them first one way and then reverse them between the fingers and thumb as they pass along the stone. Do not rub the gouges on the inside with the stone, unless it is to remove a jagged edge. Even then great care must be taken, and the stone should perfectly fit the concave side of the tool. It is not advisable for beginners to grind their own tools. If they are obtained in good condition they can be easily kept so, with a little attention and care. Tools only require to be ground when they become very blunt or broken. Take good care that the edges of your tools do not rub against each other. They should be always laid parallel, whether in use or not. After using the oil-stone wipe it well with a rag or shaving, to free it from grease.

IV. SURFACE DECORATION.

In surface-carving, or "carving in the flat," the design is merely outlined, not modelled. Perhaps the most artistic kind of surface-carving is that done, after the fashion of the old Norsemen, in the "Dragon"[1] or "Viking" style.



DESIGN 90.—CARVING IN THE FLAT. OLD CELTIC "STRAP WORK."

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[1] The first name refers to the most characteristic motive of the Norse designs, which is a much conventionalised writhing serpent with a dragon-like head; or rather we might say a series of such serpents inextricably combined to form a sort of strap pattern. The second name is due to the fact that the Norse Vikings made elaborate use of this kind of decoration—on the garments of their women and in their domestic surroundings, as well as on their ships and arms.

As the beauty of a design of this sort depends chiefly on the perfection of the outline, you cannot be too careful in the drawing.

Having made the design on paper, transfer it to the wood. To do this, place it in the exact position it is to occupy on the panel, and under it put a sheet of black transfer-paper; then with the pencil, or a dull ivory point, or, better still, an agate stylus, go carefully over every line of the design, and, according to the accuracy with which the tracing is made, the outline will be transferred to the wood.

Take your smallest-sized veining or V tool, and follow the outline very carefully all around the design; make a clean cut, uniform in depth and width, following the line as accurately and as closely as you can without destroying it. Afterward go over this groove outline and deepen it; then, with a flat gouge follow the sharp edges left on the background by the veining tool and smooth them into the background. To give contrast between the pattern and the background- for there will be no variation in the relief—stamp the background with a fine stamp. Under ordinary circumstances we do not advise the use of the stamping tool, for it renders wood-carving too mechanical; but in such a case as this it seems to be necessary.

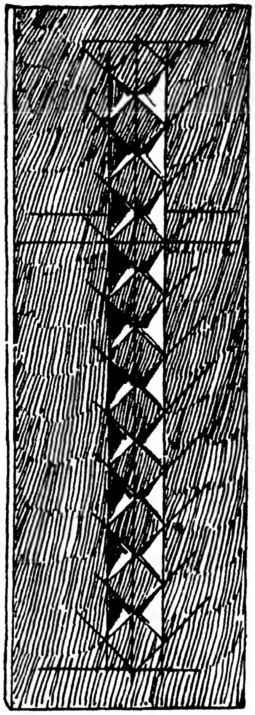
Having finished the stamping, take up the flat gouge again to represent the intersecting portions of the design, which is done by sloping the parts that run under down toward the parts that are to be represented as crossing them.

Rulers, paper-knives, and tea-trays are usually the first things decorated in the "Viking" style; as in this kind of carving there are no projections of relief to split off, it is particularly suitable for the decoration of any articles of furniture subject to much contact with the person.

Surface-carving may be used on woods after they have received their finish, as for the decoration of work-boxes, handkerchief-boxes and glove-boxes, chairs and small table-tops, photograph-frames, book-racks and footstools.

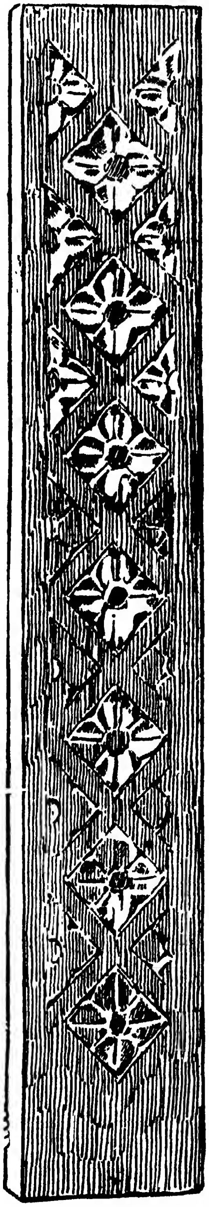
V. RELIEF-CARVING.

The general and perhaps most artistic method of carving is in such relief that the design, when completed, appears wholly raised above the "ground," the background having been lowered or cut away to a uniform depth. Transfer the design carefully. In order to cut away the background, the dead wood must be separated from the pattern edges. Take a gouge and go around the outside of the design $\frac{1}{8}$ in. away from the lines, cutting carefully with the grain, say $\frac{3}{8}$ in. in depth, and being very careful the gouge does not slip,



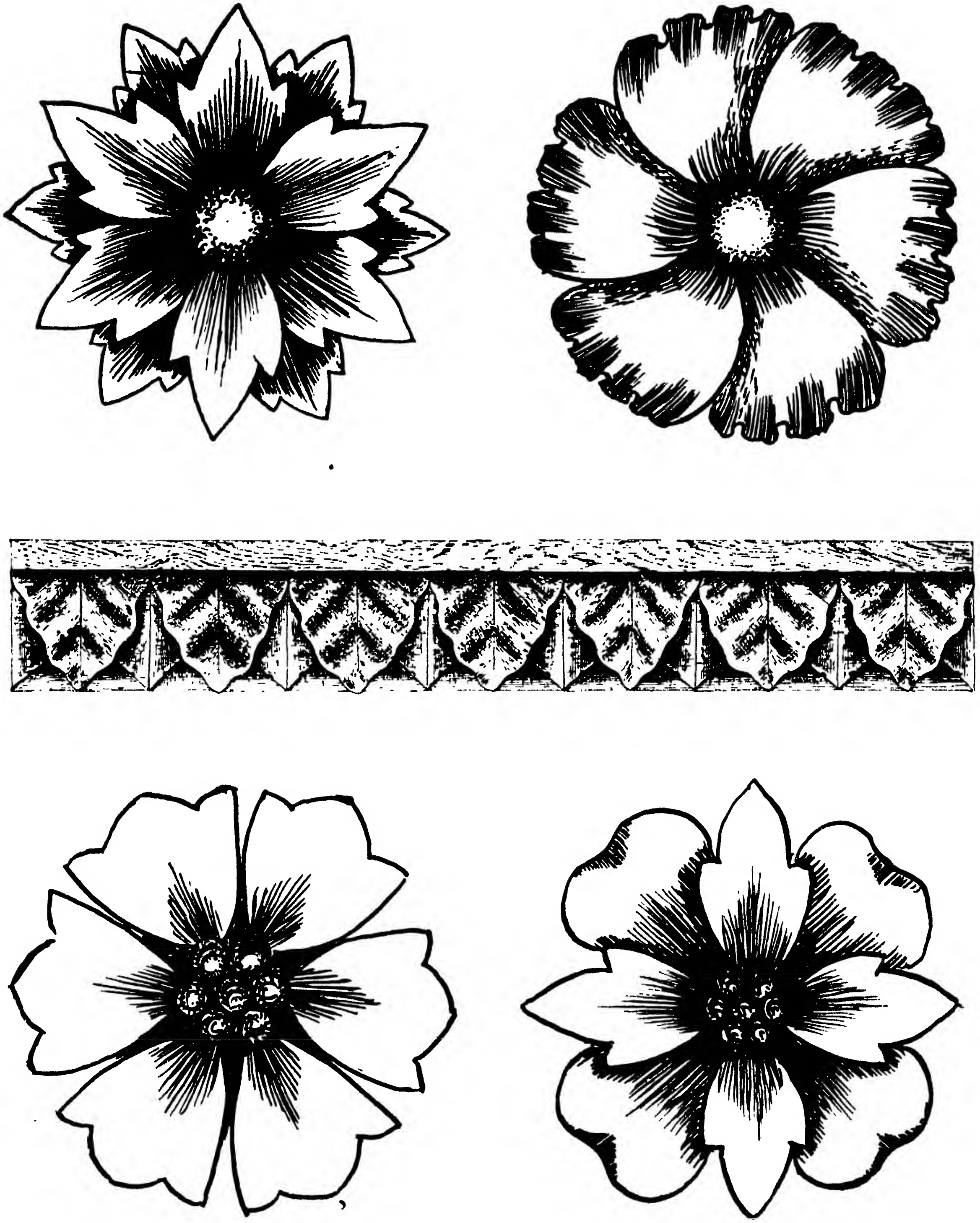
DESIGN 91.—SIMPLE EXERCISE FOR A BEGINNER.

Make the diamonds 1 in. square. (See p. 310.)



DESIGN 92.—SIMPLE EXERCISE FOR A BEGINNER.

Make the diamonds 2 in. square, and the plain bands $\frac{1}{2}$ in. wide. (See p. 312.)



Designs 93-97.—Rosettes and Simple Band of Decoration for Wood-Carving.

as it may cut away a portion of the design. This gouging or trenching is to allow the background to break away easily when you are stabbing out, or, as it is properly termed, "kurfing," the pattern. If this trenching is not done, the design is liable to break away before the background. Next take a flat chisel and "kurf" the design out all around in a continuous line, sloping the chisel at a slight angle (see fig. 208) and driving it with the mallet toward the groove you have previously cut. In releasing the tool, move it from end to end sidewise, not flatwise, as you are liable to break the tool. Sharp curves should be "kurfed" with the gouge, or any of the tools that will fit the exact form of the line to be cut.

Now to remove the background. This is called "grounding," or cutting away the dead wood. Take the flat gouge and remove the wood. The corners and sharp angles can be cleared away with the skew chisel. Do not splinter your wood; do not dig it, but take it off in clean *cuts*. Try always to cut with the grain, making it smooth and level.

After the background has been removed, go over the whole design, cutting those parts under which are overlapped.

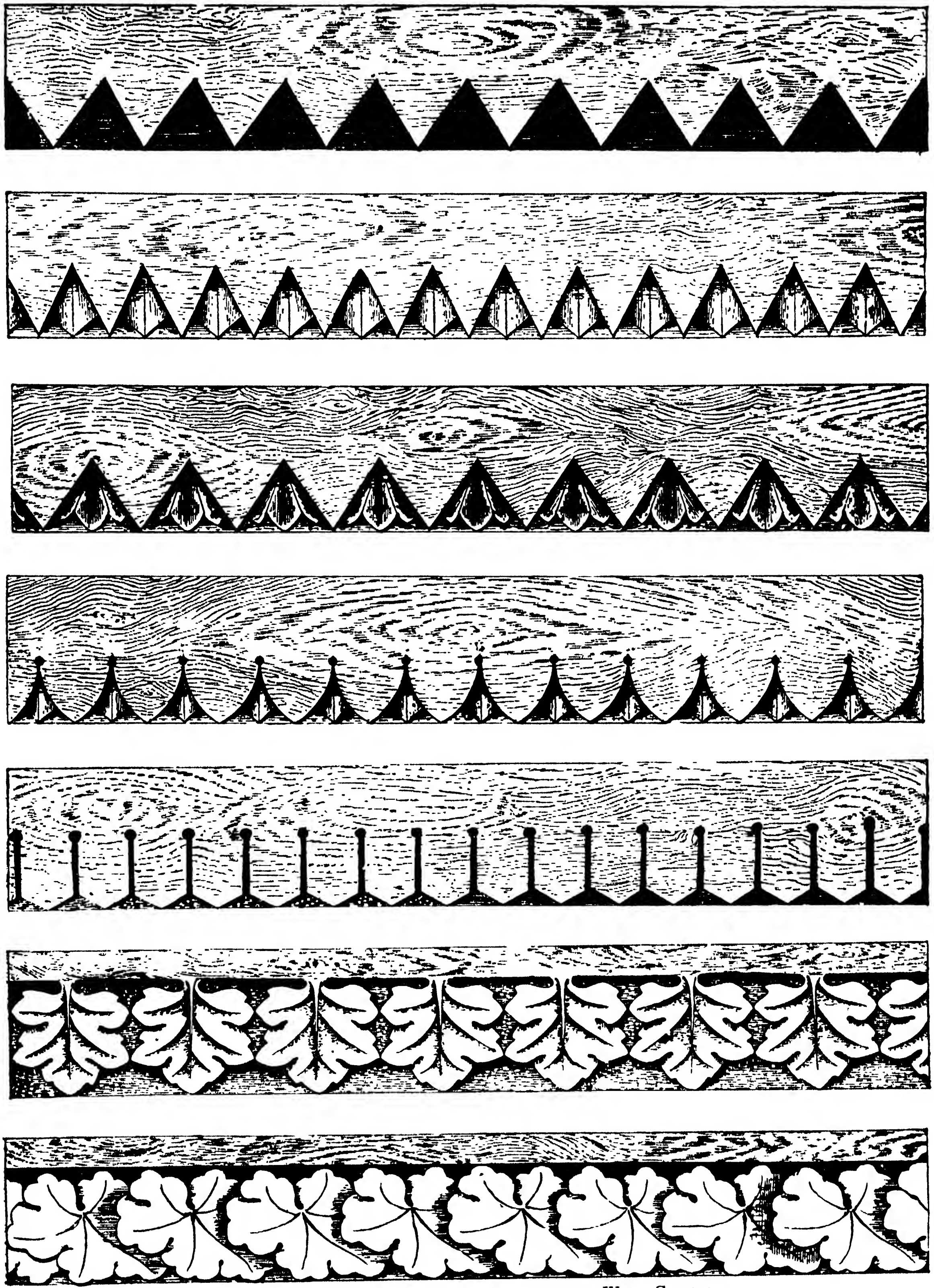
The work is now in condition to be modelled. Do not attempt to finish any one part. Study the whole design carefully. Supposing that it is one of flowers and foliage, cut under all those parts that are concealed by others. Give to each the depression it will have in the finished work. Each part should be cleanly cut with one stroke of the tool, leaving the permanent form nicely smoothed before it is veined.

Trim down the stems to their proper size; see that they are neatly attached to the leaves; finish all the stronger parts first, leaving all little stems till the last, as they are liable to be knocked off; smooth up the work with a well-sharpened tool, and it is then ready to receive the finish.

Two very simple exercises for beginners are shown on page 318. In the first we have a simple band of bevelled points, leaving a row of diamonds in the centre. Take a narrow chisel and hold it vertically, setting it at the inside point of the level; cut straight down to an equal depth on each side, sloping to the outside edge. Then holding the chisel in the position shown in fig. 207, cut from the outside edge down to the centre. To cut the point clean, use your narrow bevelled chisel. Always work with the bevelled side of the chisel down, and be careful to hold it flat on this bevel; otherwise you will wear it off round. Try to cut with a firm, even stroke. One cut is better than two, if it will do the work.

In design 92 we have an example in which the conventionalised flower forms require slight modelling. Get the centre of the diamond and, holding the medium gouge straight and turning it once, cut the "boss" in the centre of the figure. Outline the petals with the flat gouge, setting the tool at the point where the petals join, and cutting to the outside point. The width and the sweep of the tool with a little handling will give the outline required. With the chisel bevel around the edges deep enough to get an effect of light and shade. Make the straight cut indicated in the middle of each petal with the V tool, cutting toward the boss, and making the cut deepest at the centre. Model the flower with one cut on each half-petal with the medium gouge. Round slightly the sharp edges of the boss in the centre. Draw the diamonds two inches square and the plain bands half an inch wide.

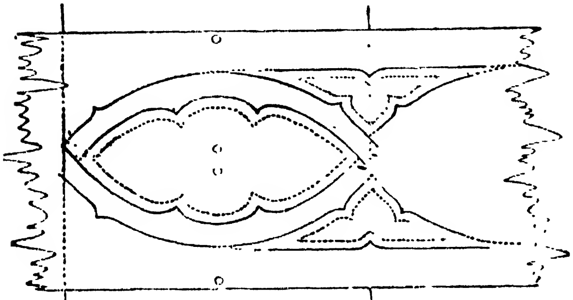
Finishing is best done with raw linseed oil applied with a bristle brush, as much being used as the wood will absorb. Three or four coats will be needed as a rule. The pattern may be polished by brisk but careful and oft-repeated rubbing with a stick of soft wood. Beeswax is often used for polishing, although we think that the more artistic way is to depend solely on the dull finish obtained by means of oil alone. Even more than the use of wax polish on carving do we deprecate that of varnish of any kind, for it is a poor substitute for the natural "patina" which comes from age and wear, the process of which is arrested by a covering of varnish. But for the benefit of dissenters from this view we give the following



Designs 98–104.—Edgings and Mouldings for Wood-Carving.

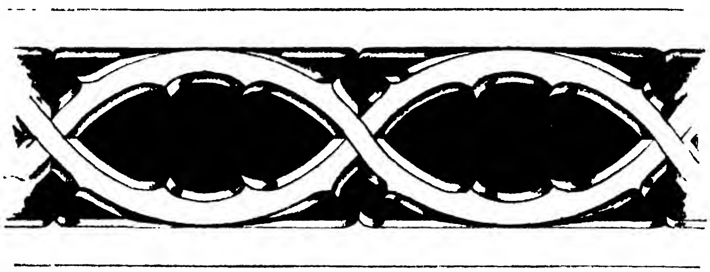
directions for shellac finishing, by an expert carver who finds it proper to use it.

Polishing.—“ To polish flat surfaces, such as table-tops, the wood must be well rubbed with No. 0 sandpaper, and all knot-holes and flaws must be stopped with wax. The wood is then filled with ‘patent wood-filler,’ which is first thinned down with turpentine to the consistency of cream. Rub it in with a rag or a little bunch of excelsior shavings. In a few minutes the pores will be closed, and the surface of the wood may be rubbed freely without rubbing away any of the filler in them.


DESIGN 105.—MOULD FOR MARKING OFF THE DESIGN SHOWN BELOW.

“Put the wood aside until the next day; then give it a coat of shellac varnish, and put the wood aside again for a few hours to harden. When it is hard, rub it well with No. 0 sandpaper until it is perfectly smooth.

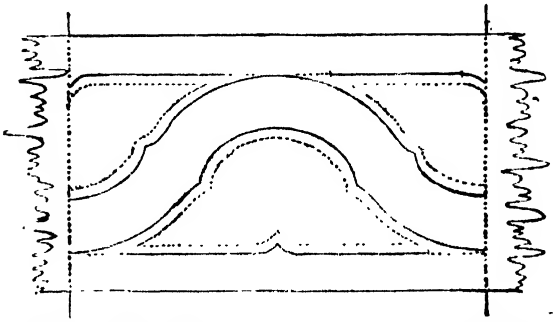
“The final polish is given with a ‘rubber,’ which consists of a small ball of cotton-batting covered with a piece of soft linen rag, wrapped so as to leave a handle at the back for the hand. Partly saturate the rubber by placing it on the mouth of the bottle, throwing the solution toward it two or three times. In the middle of the varnish on the rag, place with with your finger a little raw linseed-oil. Rub with small circular strokes until all the pores are filled, charging the rubber with varnish and oil when required, until the whole surface has had one coat. When this is quite dry, repeat the process until the surface appears even and fine. Between each coat use the sandpaper to smooth down all irregularities. Lastly, use a clean rubber, with a little wood alcohol only, which will remove the oil and the cloudings it causes. Should the work become sticky and rough at any stage of the process, this can be overcome by touching the surface here and there with a little oil, which you should have near you in a saucer, so that you may dip a finger of the left hand into it, repeating the process when needed. This is merely to facilitate the spreading of the varnish smoothly.”


DESIGN 105A.—CARVED GOTHIC DADO RAIL. EASY LESSON FOR A BEGINNER.

Stamped Backgrounds.—As has been already observed, stamping backgrounds, in our opinion, gives too mechanical a look to wood-carving in relief for it to be considered an artistic finish; but as some carvers are not of our way of thinking, we must not ignore a process which many amateurs find attractive and use extensively. So, if you choose, having finished your modelling, complete the work by stamping the background. For any design of fair size, use the largest stamp you have--the smaller ones are for small spaces; set the stamp, and strike it lightly with the mallet. Keep turning the stamp so that its square shape will not show on the wood. The object of stamping is to get a fine-grained effect. When the grain of the wood is broken it absorbs the oil more readily, and makes a background darker than the design. This, with the different texture it gives the wood, throws the design into still higher relief. Coarse stamping is more effective than fine.

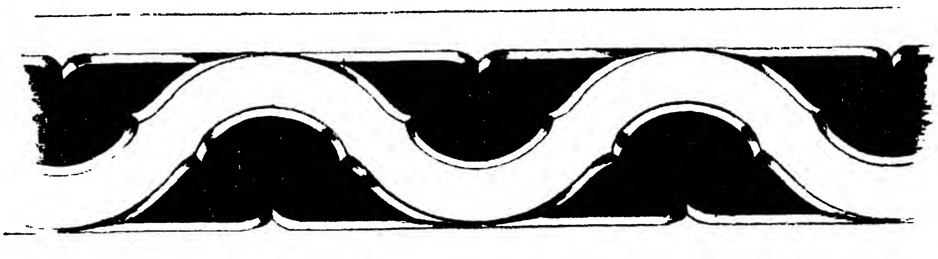
A Gothic Dado Rail.—One who has never done actual cutting in wood and who has doubt as to his ability to produce anything creditable in this way, might, in many cases, be induced to make a trial, were some specific work of a simple character suggested to him for a beginning, and which, if successful, could be a noticeable feature in the decoration of his home. Such an occasion for a first attempt is easily found. In most houses there are one or more rooms in which the walls, whether painted or papered, are divided into dado and frieze, the latter varying from twelve to thirty inches in width, according to the height of the room. Let this division line between the two wall colours be emphasised into a line of decoration. Instead of the usual painted band, or machine-made moulding, let the division be marked with a striking line of hand-carving. It may be of cherry, black walnut, or oak, and two and a half or three inches wide. The finished result will be more satisfactory if the wood is polished on the face and lower edge before the carving is begun. The upper edge of the strip should be rebated toward the back, to afford a hold for hooks, from which pictures might hang. These strips, which any carpenter could prepare, should be cut to the proper lengths, to fit, before they are carved. When carved they should be secured to the wall by means of eightpenny finishing nails, driven into the studding through the lowered portions of the carving; by doing this the heads of the nails will not be seen.

Two rooms, in which a carved frieze-band of cherry wood was introduced, are in the mind of the present writer; the added beauty secured by this simple decoration won the approval of all who saw it. The designs consisted of easily cut patterns of Gothic tracery, of which we give illustrations.



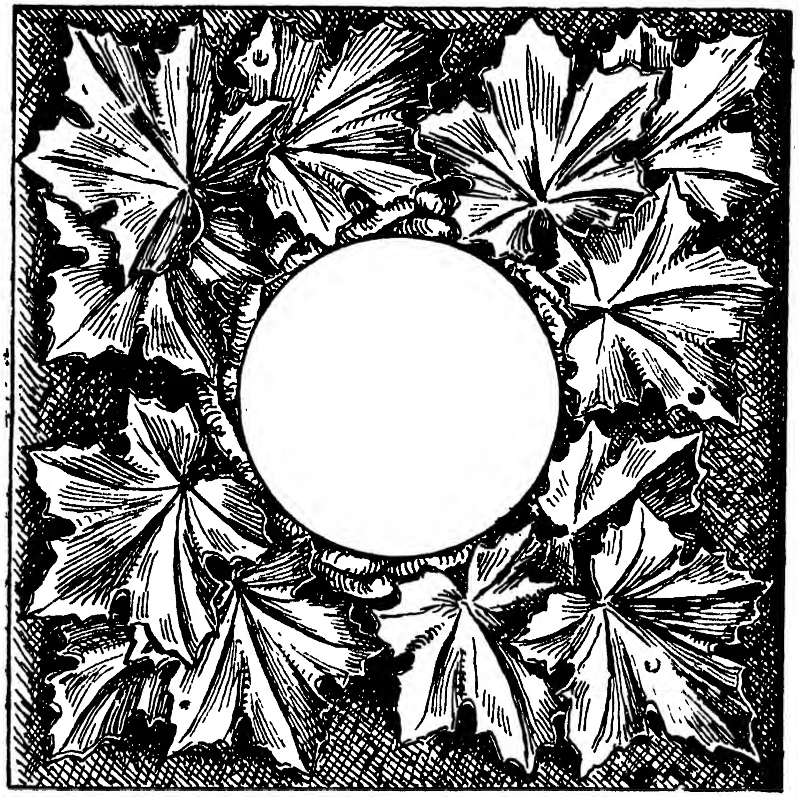
Design 106.—Mould for marking off the Design shown below.

To facilitate marking off a design for carving, where a given form is many times repeated, it is customary to make a *mould* of cardboard by means of which the design is readily and accurately transferred to the wood (designs 105 and 106). The design, after being drawn on the card, is cut through with a sharp knife, a gouge of the proper sweep, where possible, being used to cut the curves. When the lines are cut through the card, they must be opened and widened, so that a sharp-pointed pencil will mark through the cut line to the wood.



Design 106a.—Carved Gothic Dado Rail. Easy Lesson for a Beginner.

This can be done by placing the mould upon any smooth surface and pressing a dull point or tracer through the line. If, before using, the edges are painted with shellac varnish, the mould will be strengthened, and probably last double the time it would if this were not done. Above each of the simple Gothic designs illustrated herewith is a diagram of the mould for marking it off. The centres from which the larger curves are struck are indicated, leaving the quicker curves of the cusps to be drawn by hand. The lines of the mould which are to be cut through are indicated by an unbroken line; the dotted lines must *not* be cut, otherwise the mould would drop into pieces, but are to be put in by freehand drawing. If the wood is polished, and the amateur doubts his ability to draw these parallel lines with accuracy, the dotted lines may be pricked through to the wood,—this, of course, will not avail if it is unpolished.

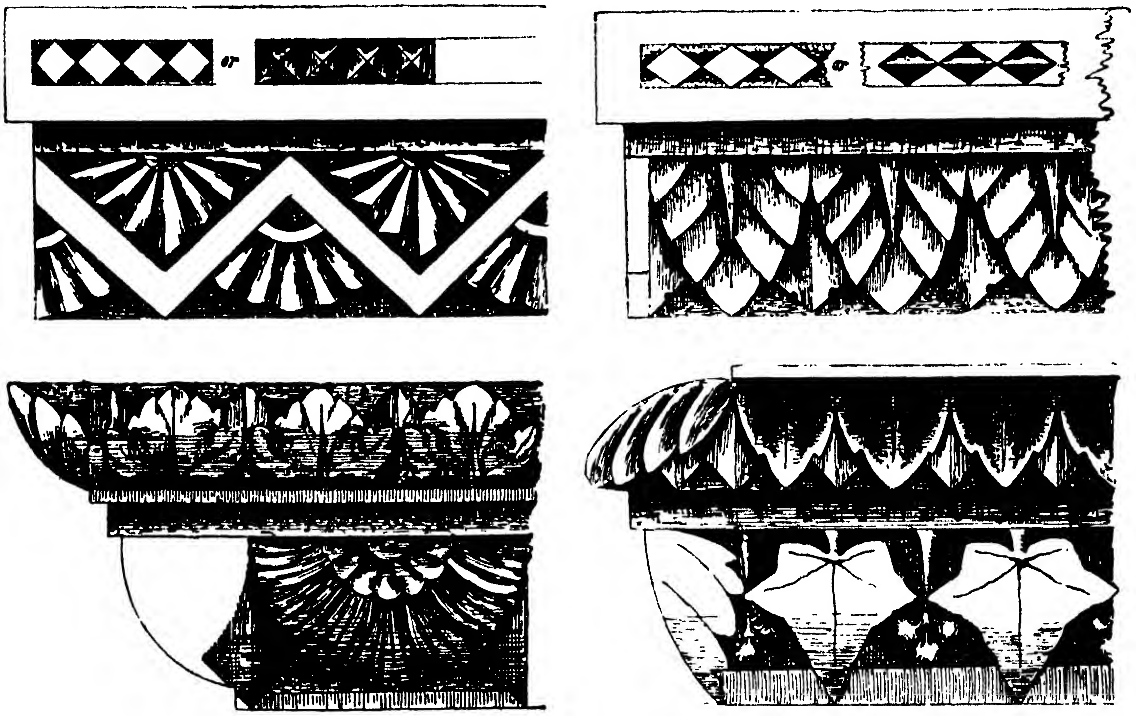


Design 107.—Wood-Carving. Watch Stand.

In laying off this design, first make vertical lines with a **T** square, three inches apart, which will be the guide for placing the mould in the exact position. A mould to mark off a strip or border of a given width should always be made with a doubled-over edge, of, say, half an inch in width, to serve as a gauge or guide, and which, sliding along the edge of the strip, secures uniformity in marking the design.

Lower the portions within the dotted lines a quarter of an inch, and stamp the background with a coarse stamp. The edges of all bands in Gothic tracery are finished with a hollow chamfer, as shown in the illustrations, and indicated by the dotted line of the moulds.

Edges of Shelves admit of varied treatment. Fig. 211 shows a square-edged shelf, with a one-and-a-half-inch supporting rail. A lozenge or square diamond, or a dog-tooth, is simple and appropriate decoration for a square-edged shelf. The rail admits of varied conventional decoration, as in figs. 211 and 213. The edge of the shelf should vary in form according to the position it occupies; that is, whether above or below the eye. If the square edge is not used, it should be moulded as in fig. 212 when *above* the eye, and like fig. 214 when *below* the eye. In every case the rail should be set back at least a quarter of an inch from the face of the shelf, and the edge of the shelf should be recessed a like distance from the front edge of the sides. The edges of shelves should not be modelled, but carved with surface treatment when in a position to catch the dust.



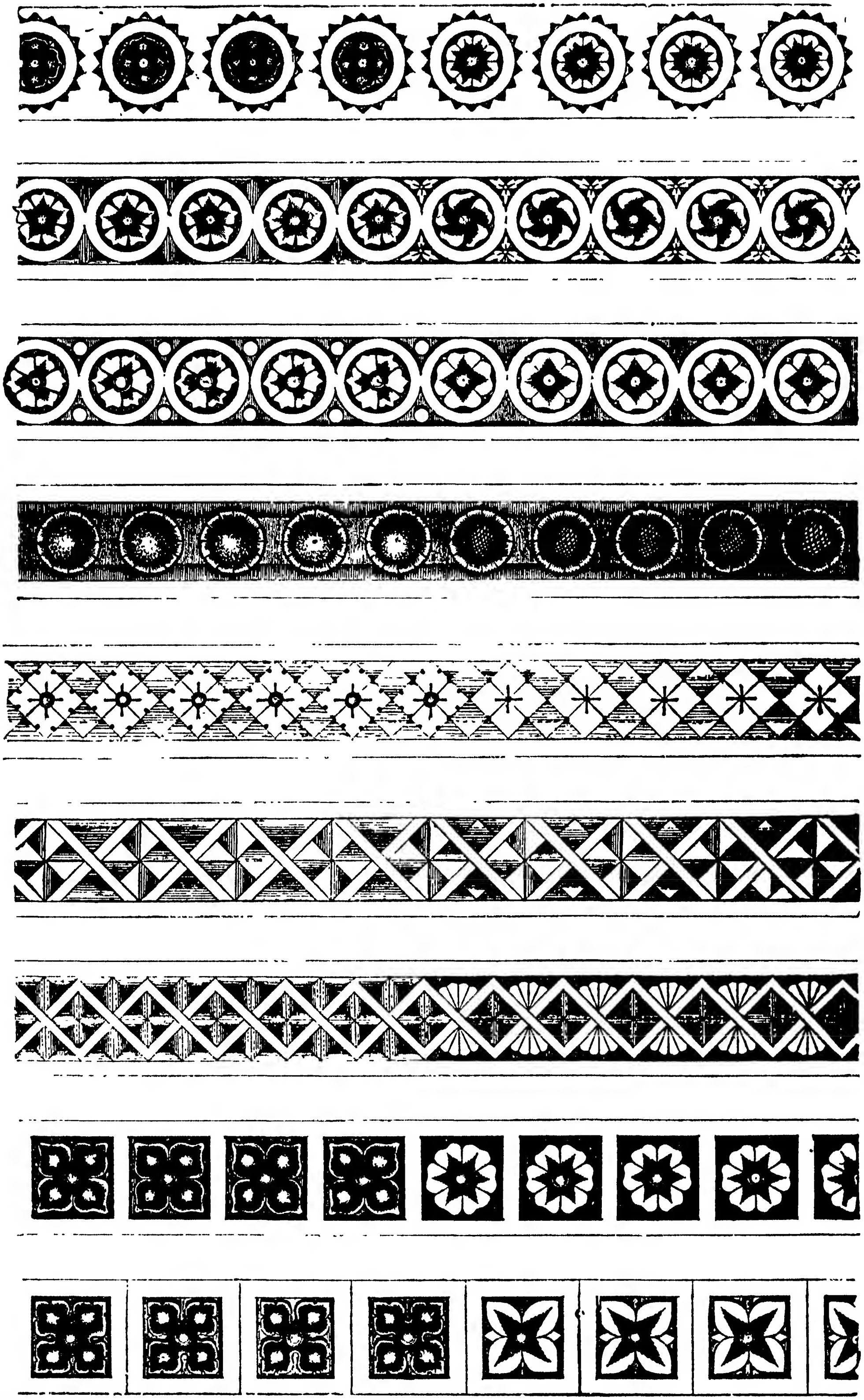
Figs. 211-214.—Edges of Shelves to be placed respectively Above and Below the Eye.

The supporting rails may be left with a square face, as in figs. 211 and 213, or they may be moulded, as in figs. 212 and 214. In the latter case the execution of the carving requires more care, but the added effect is well worth the extra trouble.

One of the most useful and inexpensive articles of furniture—admitting, at the same time, of fine and varied decoration—is a set of hanging shelves, suitable for books, dining-room service, or for *bric-à-brac*. It may be made in the simplest manner, and it admits of almost any degree of elaboration, both in construction and decoration. Black walnut, cherry, or oak may be used. The carved parts should not be stained, but simply brushed over with raw linseed-oil.

There is a point in the construction of hanging shelves which should not be overlooked: the cabinet-maker should invariably be directed to dovetail all the shelves into the sides.

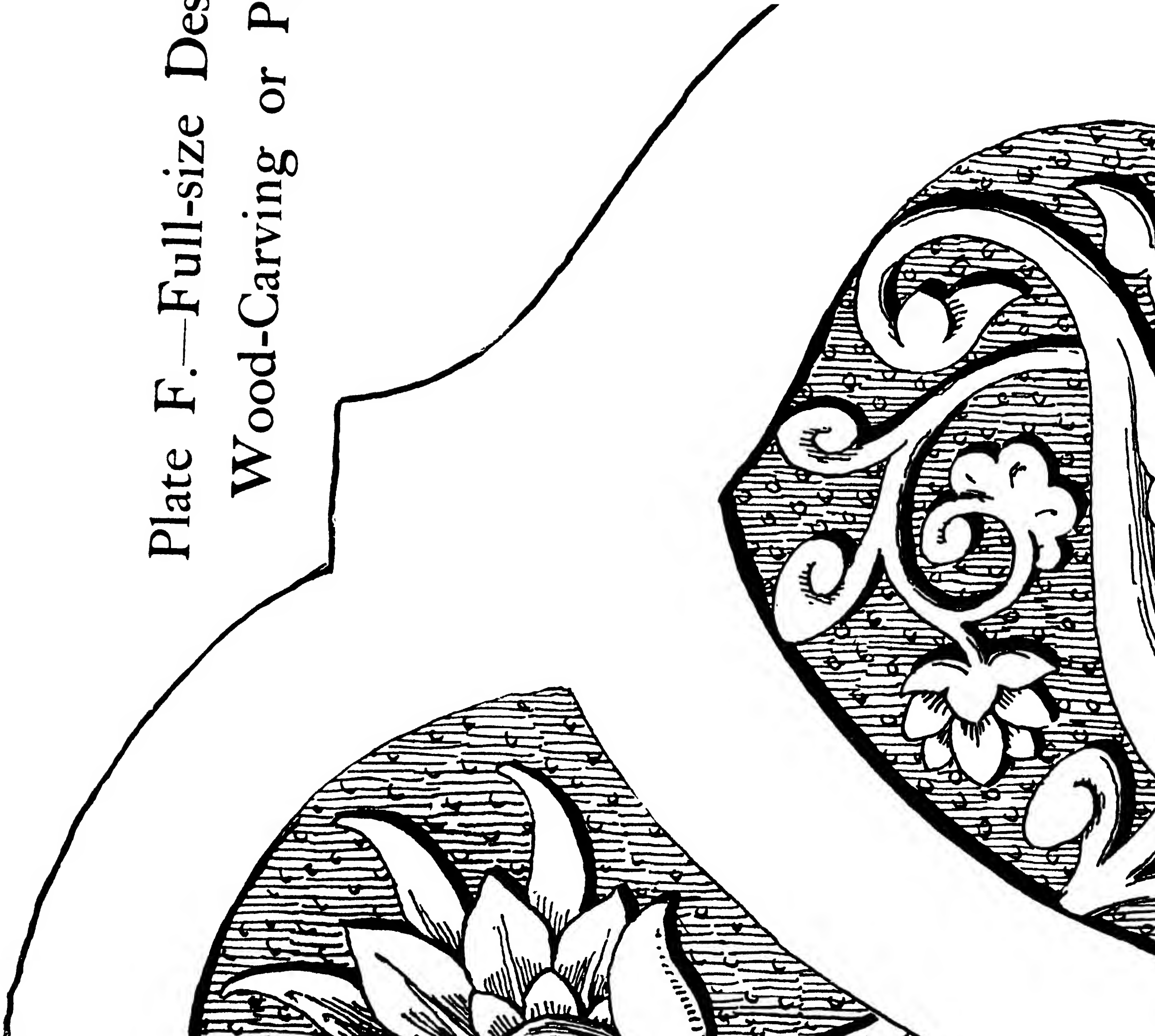
The decoration of the sides should be selected with reference to its general effect, and, while appropriate and striking, should be subordinate to the face decoration.

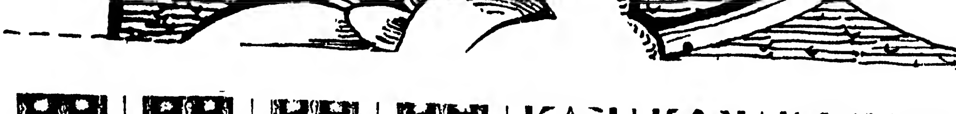


Designs 108–116.—Bands of Decoration for Wood-Carving. To be Applied either Vertically or Horizontally.

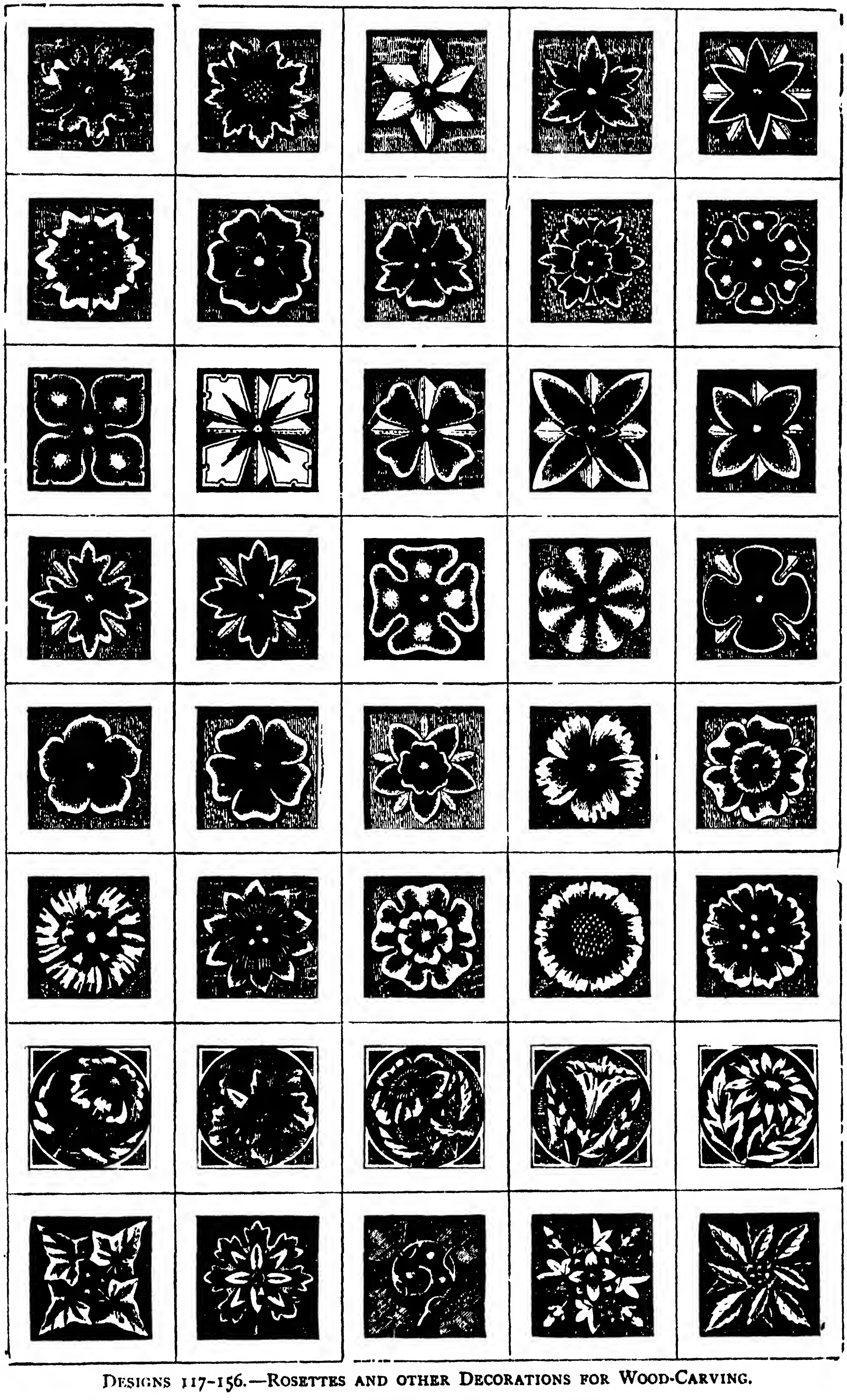
Designs 117–156.—Rosettes and other Decorations for Wood-Carving.

Plate F.—Full-size Design for Wood-Carving or Pyrogravure.



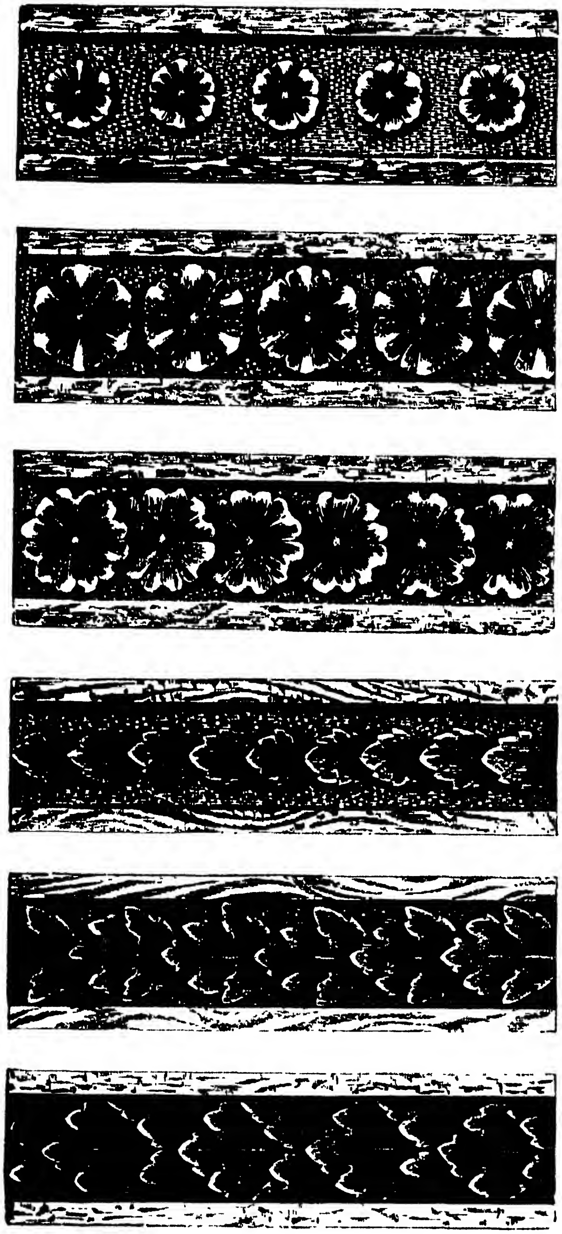


DESIGNS 108–116.—BANDS OF DECORATION FOR WOOD-CARVING. TO BE APPLIED EITHER VERTICALLY OR HORIZONTALLY.



Designs 117-156.—Rosettes and other Decorations for Wood-Carving.

Diaper designs are often used for the decoration of such objects as cabinets and bookshelves; for the back panels of open shelves, the sides or ends of caskets, book-racks, and other places of *secondary* importance, the more prominent spaces and panels being reserved for decoration of more character. The simplest and most useful diaper[1] is formed from a square. This may be used in an upright and in a diagonal position, as in Nos. 163 to 172. A diaper may be made with (No. 165) or without (No. 164) an intervening band. When a diaper design is carved without a band—a favourite form with the old Gothic architects—a distinctly incised line should mark the division. Where the diaper is one, or one-and-a-quarter inches square, the incised line should not exceed one-eighth of an inch; if smaller the width of the incision should be correspondingly diminished.



DESIGNS 157-162.—SIMPLE BANDS OF DECORATION FOR WOOD-CARVING.

Another variety of diaper is obtained by doubling the band, in which case each rosette has its own complete border, as shown in Nos. 166 and 168. The band, whether single or double, may be interlaced, wicker-work fashion, as in No. 177. Among further variations shown in our illustrations are the alternating of one rosette with another of quite different form, alternating a rosette and leaf, and alternating the front view of a flower with its profile or side view (Nos. 165, 175).

Diaper work may be made to include designs other than those of uniform divisions, an example of which is shown in design 163, where the arc of a circle, springing from a base line, then reversing and crossing with a succession of the same arc, gives pointed arches, diminishing in size and varying in shape toward the top.

A design of this order may be used with excellent effect for the back panels of *bric-à-brac*, or other open shelves where surface carving only is required.

The combined designs, Nos. 165 and 167, of course, are not intended to be used as they are shown here. It is only intended to indicate, in a restricted space, how great is the variety of motives at command for this simple method of ornamentation.

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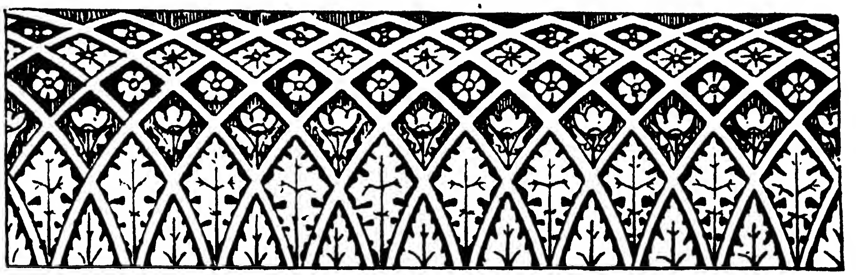
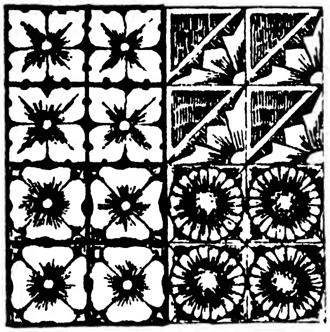
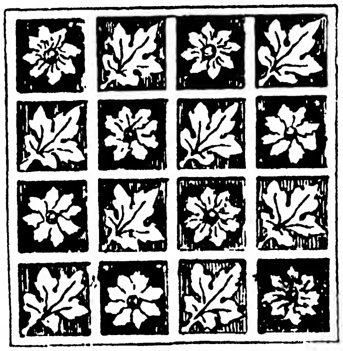
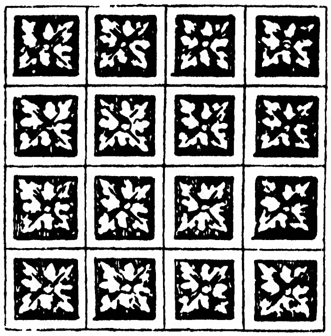
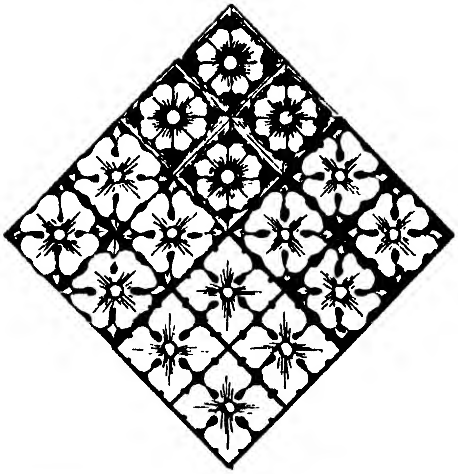
[1] The term diaper is said to be a perversion of the word Ypres, a town in Belgium, whence the method of applying, to a certain kind of fabric, designs made up "all over" geometrical patterns was first introduced into England, in the Middle Ages.

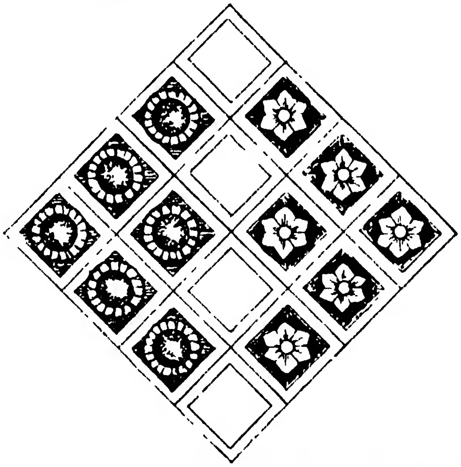


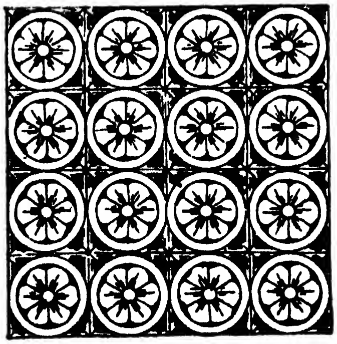


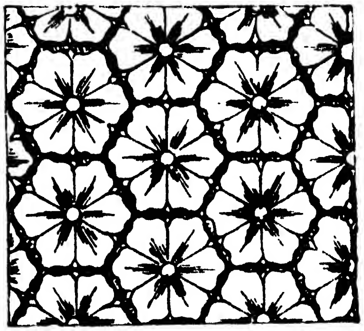








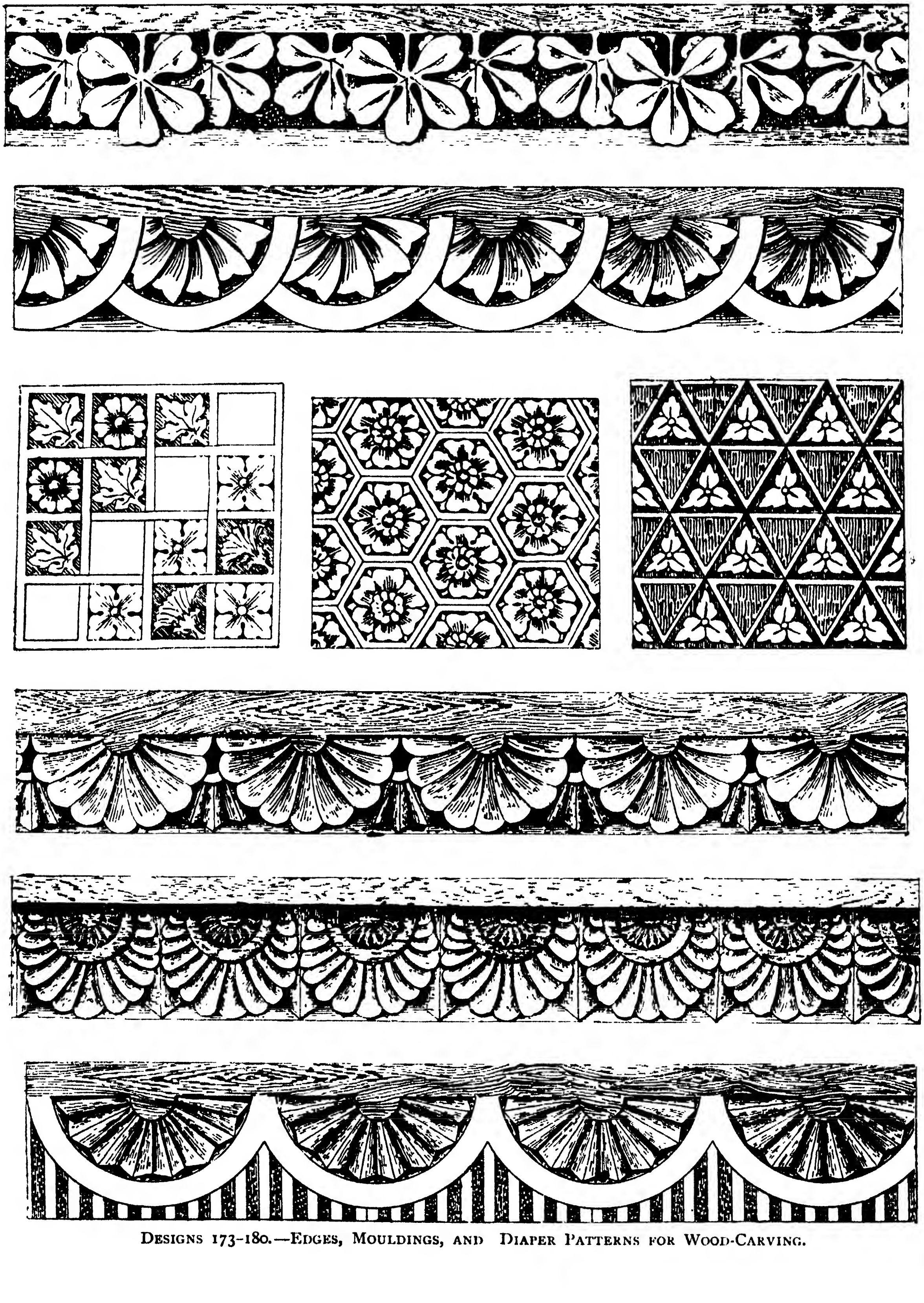




Designs 163–172.—

Diaper Treatments for Wood-Carving

(see p. 328).



Designs 173-180.—Edges, Mouldings, and Diaper Patterns for Wood-Carving.

VI. CARVING IN THE ROUND.

The wood for small articles should be close grained and well seasoned, every possible precaution being necessary to guard against splintering, or warping through variation of temperature or from moisture. Lancewood is excellent for the purpose, being uniform in grain, tough and elastic. It would be equally good for the carved spoon (No. 187) and the one decorated with fret-work (No. 188); about the latter process we shall speak presently.

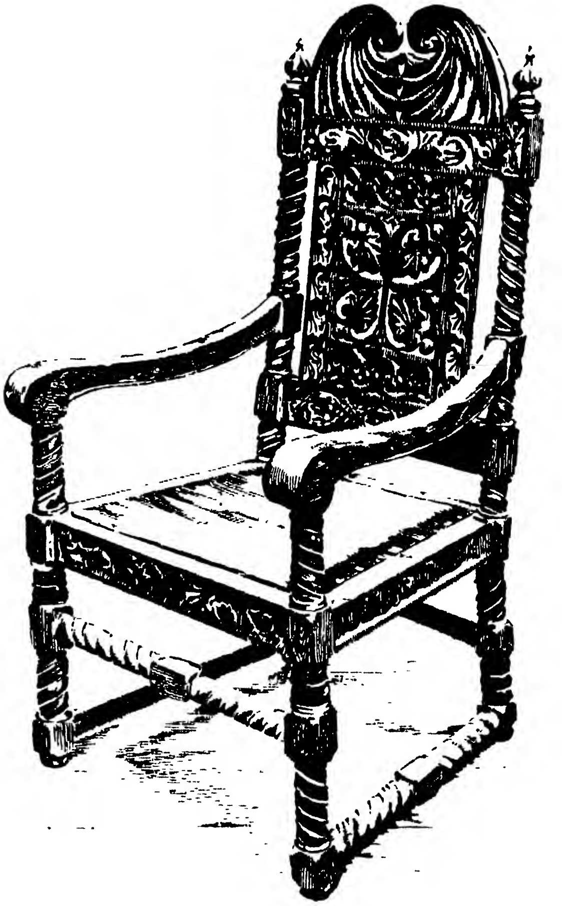
A piece of lancewood eight and a half inches long, two inches wide, and two and a half inches thick, if properly managed, will cut into two spoons. It should be planed and smoothed on both sides.

The front view of the bowl and the shape of the handle should be traced on both sides of the wood, so that there is a bowl at each opposite end. The bowl is one inch deep, and should be the first part of the work considered. The wood, being flat on both sides, can be securely held under the clamps. The making of the bowl being the heaviest part of the work, it is necessary that this part in particular should be fastened down firmly. With a half-inch curved gouge cut away the wood from right to left and left to right, removing very little wood at a time, until you have sunk the bowl to the desired depth. Then with a straight, wide, curved gouge cut away the sides. Great care must be taken not to splinter or split the wood. Such a defect, however slight, will show when you thin down the reverse side. A blemish in the bowl will make it practically worthless, as it is likely to split apart altogether. Clean out the shape as smoothly as you can with any tools that are handiest, care being taken to keep the bottom uniform, avoiding hills and holes. The final smoothing can be done with a bent riffle file and glass-paper secured to the end of a stick; the scratches can be removed with a cabinet-maker's half-round moulding scraper.

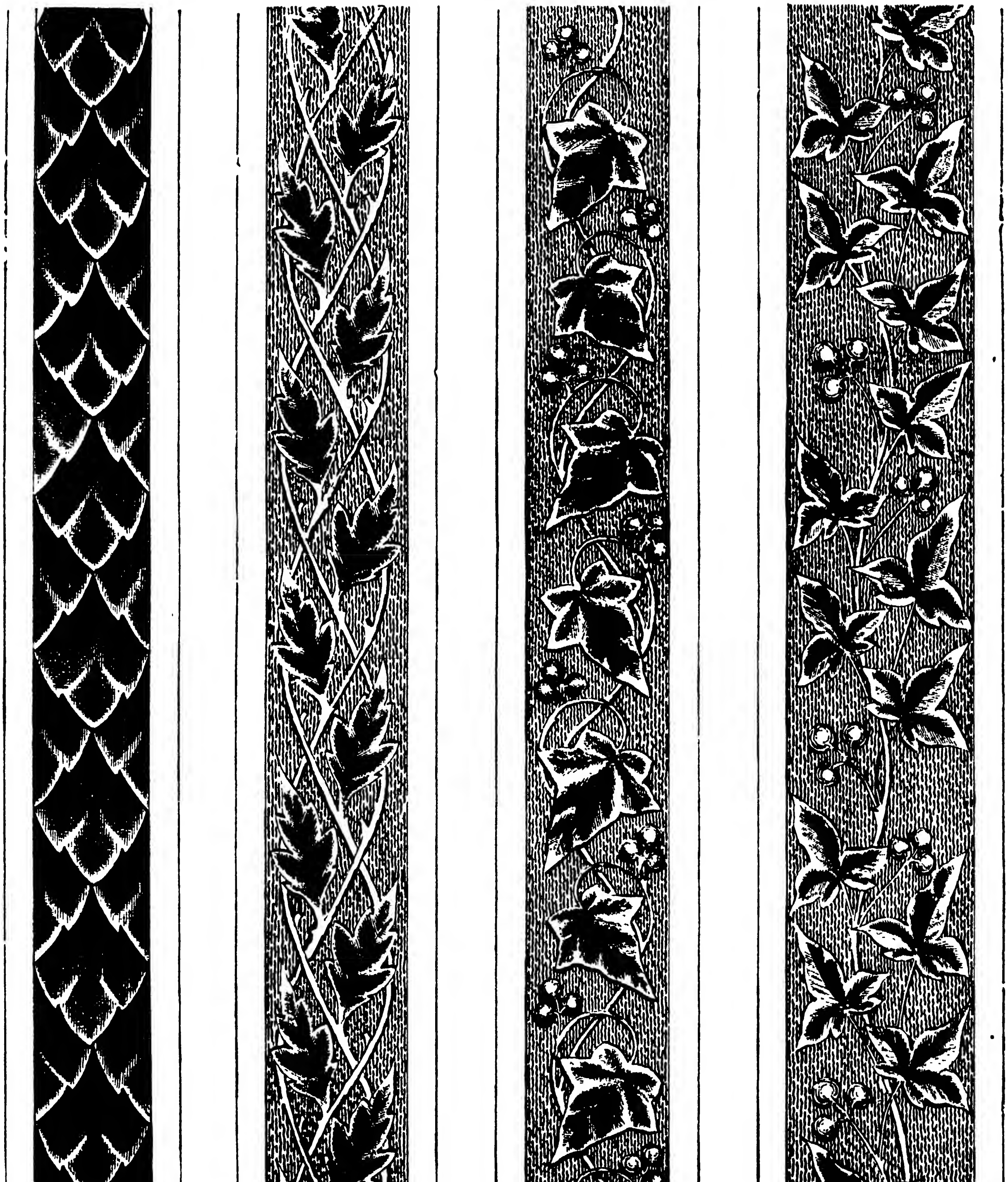
The bowls being finished, the spoons are sawn apart. The block of wood should be held by its middle in a vice. Saw half way through; turn it round and saw the other half. A good deal of the shaping of the outside of the bowl may be done with the saw, care being taken not to saw too close. The work must be held by the handle, which should be left rather thick.

With an eight-inch half-round rasp, the work may be speedily shaped. Care must be taken not to carry this operation too far; as the wood thins it will be found too severe.

The fret-sawn handle should be rasped down to about three-sixteenths of an inch, or less, according to the size of the spoon and condition of the wood. The whole is now ready to be glass-papered and scraped. The operation of fret-sawing will be described presently (see

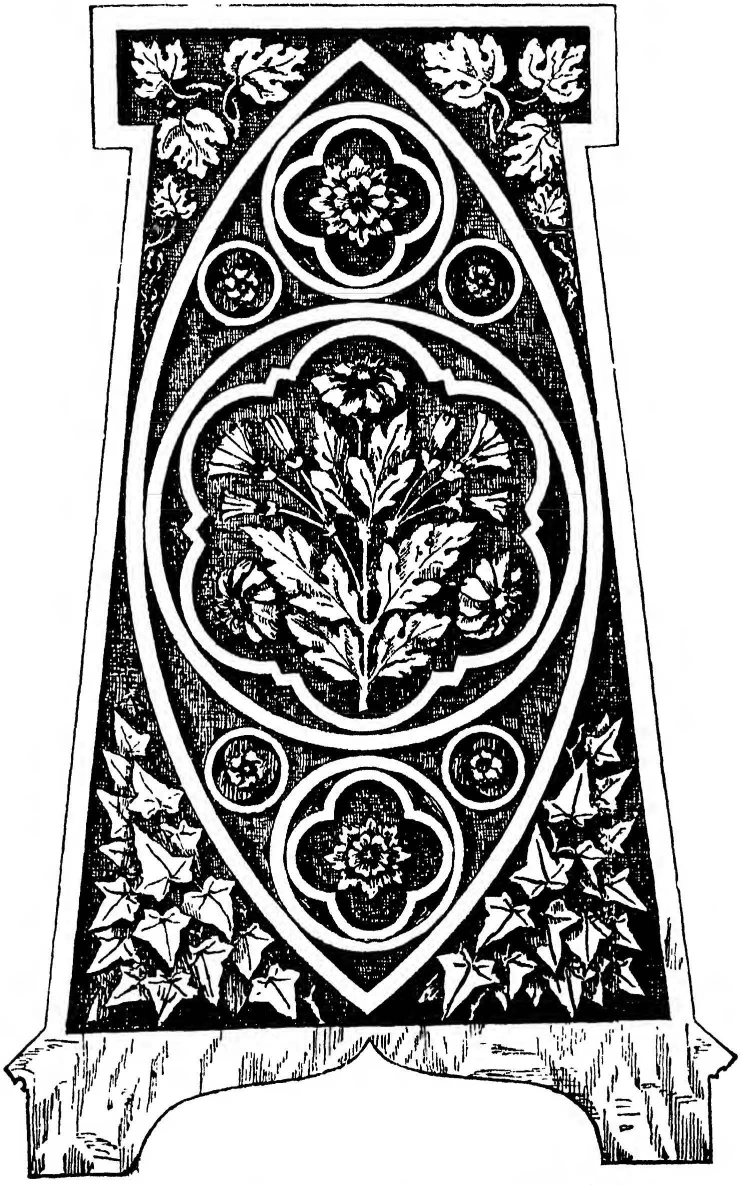


Design 181.—Armchair, carved wholly by an Amateur.



Designs 182-185.—Vertical or Horizontal Bands of Decoration for Wood-Carving.

p. 336) with particular reference to its application to the decoration of small articles of furniture; but fret-work is frequently used in conjunction with wood-carving, and for our present purpose it would seem desirable to anticipate some part of these directions.



Design 186.—Wood-Carving. End of a Library Stool.

To return to No. 188, the design should now be drawn on the back of the handle. We say on the back, because while piercing the design the bowl would not allow the work to lie flat on the fret-work "horse"—*i.e.*, a piece of wood cut out in the form of a boot-jack, with a screw to fasten it to the table, the two prongs projecting over the table.

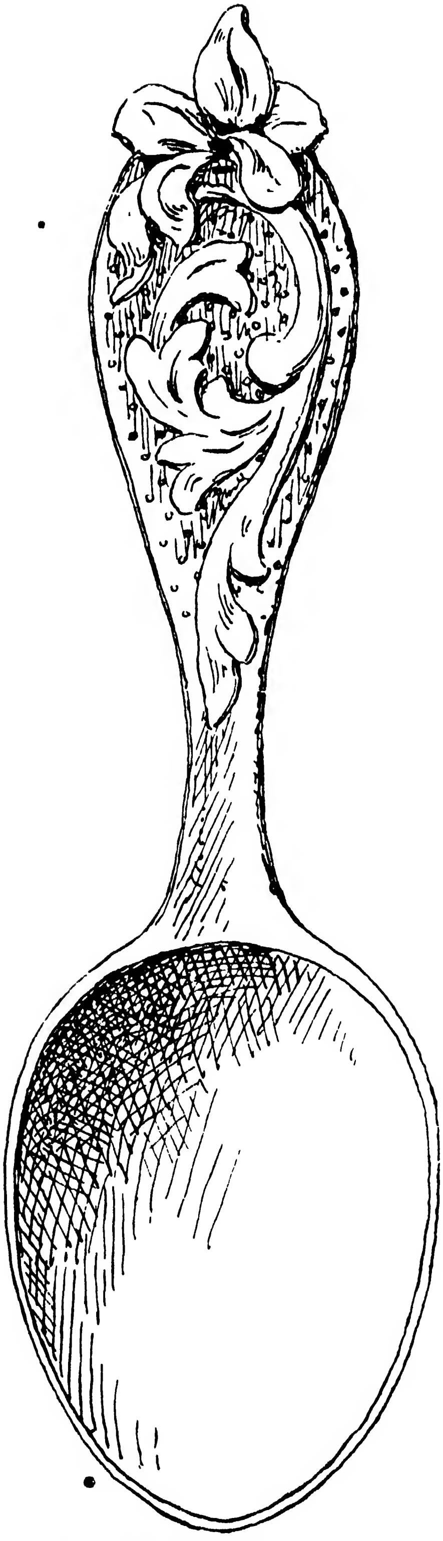
The fret-work is done as follows:—The wood to be worked is laid on the horse. To saw out the design, holes must be drilled in the places to be taken out of the interior; the saw is loosened at the bottom, put through the hole and refastened, and so on until all the pieces to come out of the centre are fretted. The saw is worked in a perpendicular manner, the right hand grasping the handle underneath the horse and worked up and down between the two prongs. The left hand is laid on the work to guide it, according to the lines to be sawn.

The shape of the handle should now be sawn out. This was not done before, because it would have weakened the wood and would have made it less convenient to hold in the vice.

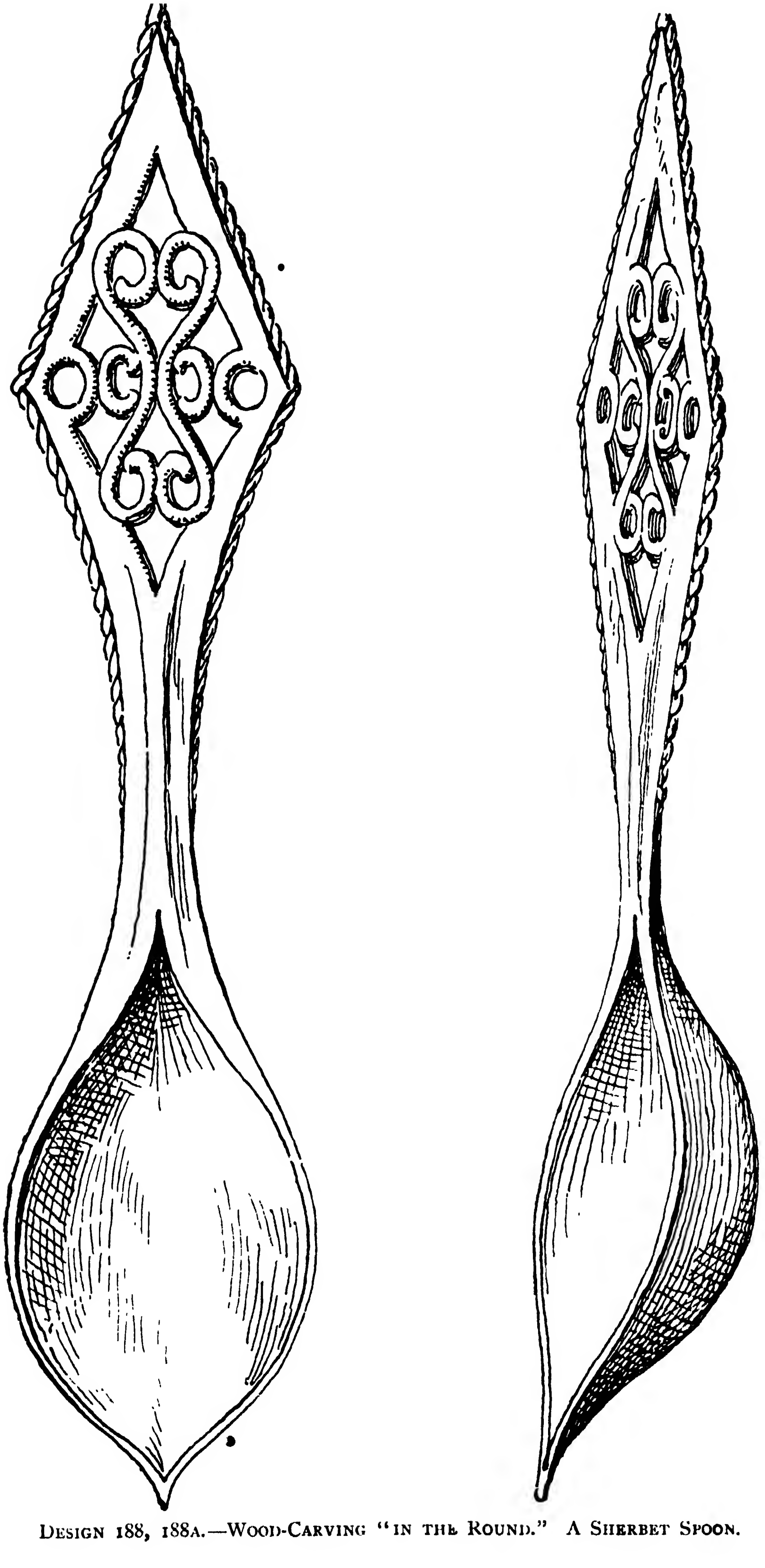
The beading round the handle should next be marked off, and shaped with a six-inch, half-round, smooth file. The lines to part the beading from the handle can be made with a parting or V tool; likewise the laps of the design. The whole should now be smoothed with 00 glass-paper, and polished. The polish is given by rubbing (burnishing) with a piece of ivory, bone or hard wood. Do not rub too hard, or you will mark the work; rub lightly and continually—the more rubbing the better the polish.

Should you require the handle of the spoon curved, it can be done by steaming. Wrap a piece of rag around the bowl to keep the moisture from it. Steam only the handle. Take a piece of board a little wider and longer than the spoon; nail a piece of lath crosswise where the curve of the handle should come on one piece of board; nail on the other board a piece where the end of the handle will come; place the spoon between the boards and clamp together; then put the spoon in a warm place to dry for about twenty-four hours or more, according to the density of the wood.

An amusing form of carving in the round is the decoration of the handle of a walking-stick with some grotesque head. A good plan is, first, to model the design in clay.



Design 187.—Wood-Carving "in the Round."



Design 188, 188a.—Wood-Carving "in the Round." A Sherbet Spoon.

FRET-SAWING.

In the classification of topics in the present volume fret-sawing comes in naturally between Wood and Metal, it being common to both materials. When applied to the latter, however, it is called Saw Piercing, and that subject will be duly considered under the head of METAL WORK.

Fret-sawing in wood is a pleasant craft brought somewhat into disrepute through the ignorance with which it has been misapplied. In no kind of decoration is the distinction between pictures and ornament more needful to insist on than in this, and in none has it been more ignorantly ignored. Naturally treated human figures, birds, beasts, and fishes, and even portraiture and landscape, have been attempted in fret-cutting! We need hardly say that the only suitable designs for the purpose are such as are geometrical, or those in which natural forms are treated as purely conventional ornament.

Fret-cut panels inserted in ordinary joiners' work are, as a rule, more appropriate than articles made up wholly of fretwork; too much ornament defeats its own end, bewildering instead of pleasing. A few panels of good design, a well-placed moulding, or a little ornament emphasising the salient parts of an object, decorate it far more satisfactorily than would a medley of so-called ornament lavished on it without discrimination. Full-sized designs for fret-sawn panels are given herewith, and diagrams suggesting how they and similar ones may be applied to furniture. The ornaments being well protected, the feature of strength has been little regarded; but if they are to be executed in wood, it must be of the sort known as three-ply. As anything placed upon the shelf of a bracket must necessarily hide some part of a carved or otherwise decorated back, the ornament, as in fig. 218, is best restricted to the top.

Fret-work is rarely pleasing when polished. Walnut, oak, or other dark woods perhaps will be most suitable for such objects as are illustrated herewith, unless some light, closely-grained wood—like birch, for instance—be selected and stained with transparent dye, such as the grass-green much seen in modern cabinet work.

All the tools[1] absolutely necessary for fret-sawing are a fret-saw frame, some saws, and a fine bradawl. In selecting your wood (walnut is the best), take care that it is of an even thickness and free from knots; for ordinary brackets and small frames one-eighth of an inch is thick enough; if thinner wood be used, extra care must be taken to see that it has no cracks or imperfections. With strong gum fix on your pattern carefully, with the grain of the wood running lengthwise. When it is quite dry begin by boring a hole in each of the white spaces in the pattern. Practice alone will teach you the best place to bore the holes so as to reduce the amount of sawing to a minimum.

Next, screw the end of the saw to which the teeth point into the clutch nearest the handle of your saw-frame, and carefully push the saw through one of the holes in your piece of wood. Then, pressing the handle of the frame against your chest and the top against the edge of the table, insert the loose end of the saw into the top clutch, and screw tight. If the saws are not stretched very tight they are liable to break. Now place the wood flat on the edge of the table, keeping it steady by pressing the left hand firmly upon it, and with the right hand saw carefully round the edge of the black pattern. It is better to begin with the inside space, and to leave the outside edge till the last. After taking out one piece carefully loosen the top clutch and insert the saw in the next hole, screwing up tight as before. When the whole pattern is cut out lay it in water with the paper side down, and the paper will come off; if this is carefully done it will be fit to use a second time.

Let your fret-work dry in a press or under some heavy books, to prevent it warping. When it is quite dry polish or stain it.

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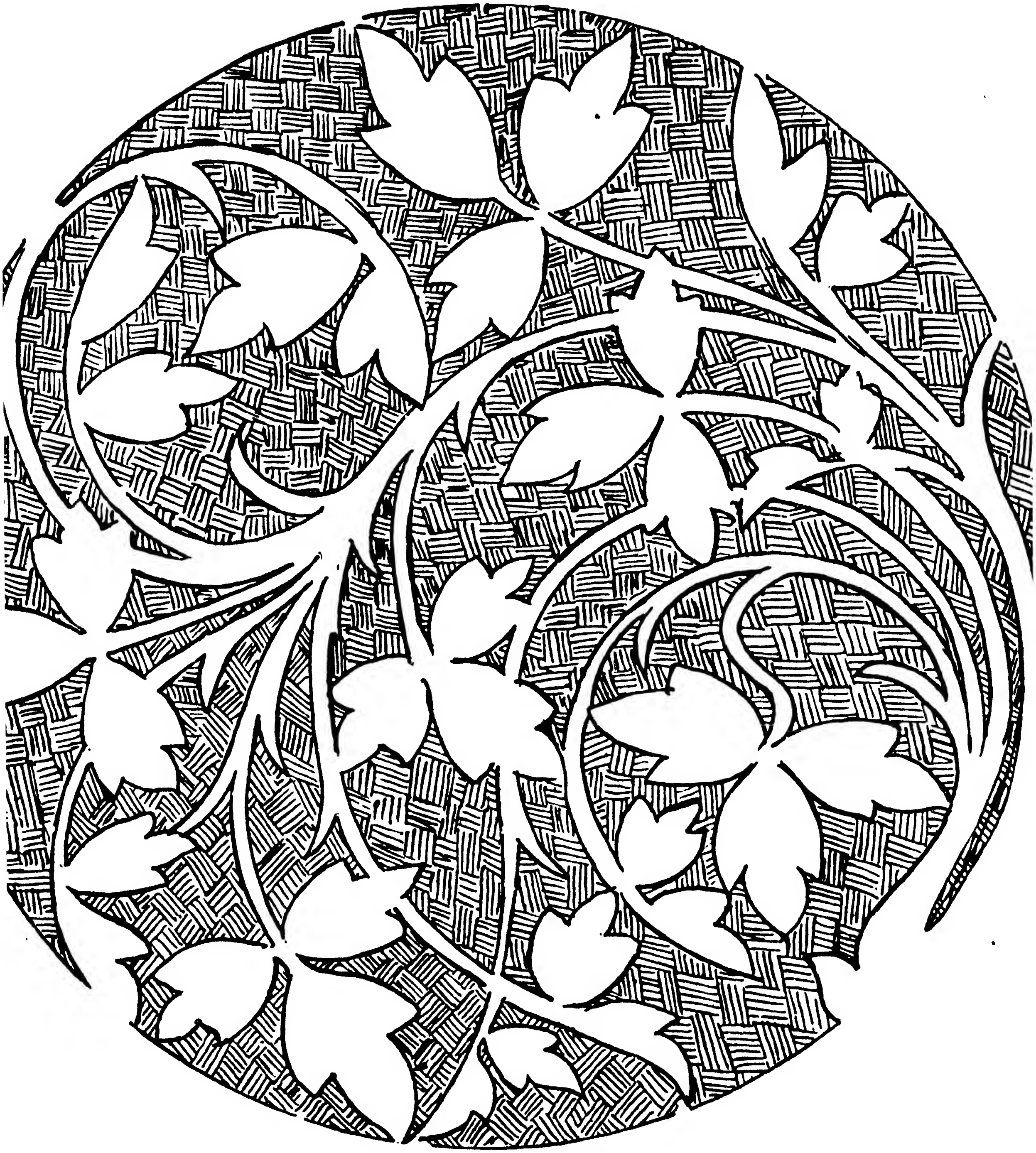
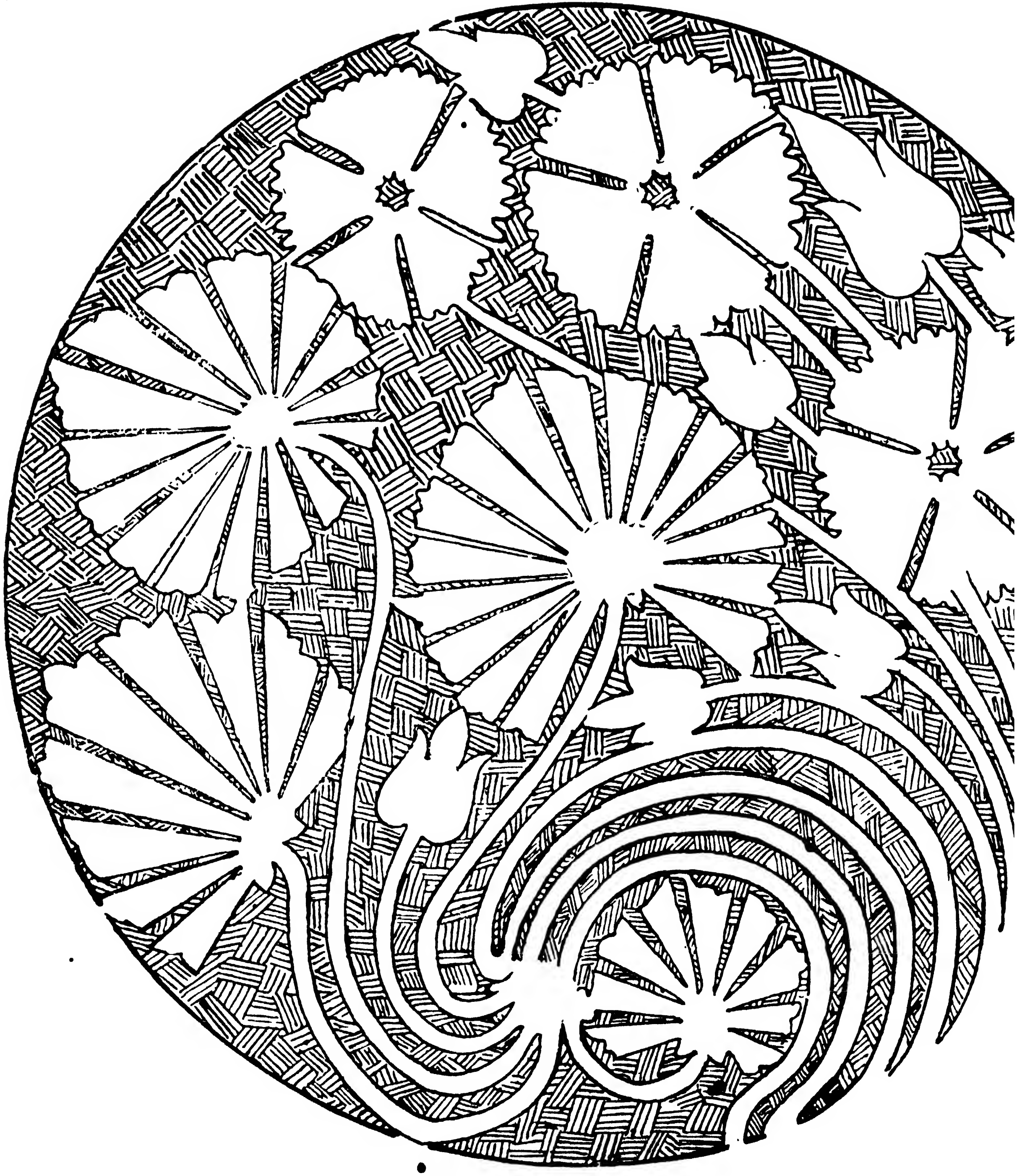
[1] In the periodical *Design and Work* will be found advertisements of tools for all kinds of woodwork.

Plate G.—Full-s



FRET-SAW PANELS FOR INSERTION IN SMALL

Fret-Saw Designs.



ES OF FURNITURE. By Gleeson White. (See page 337.)

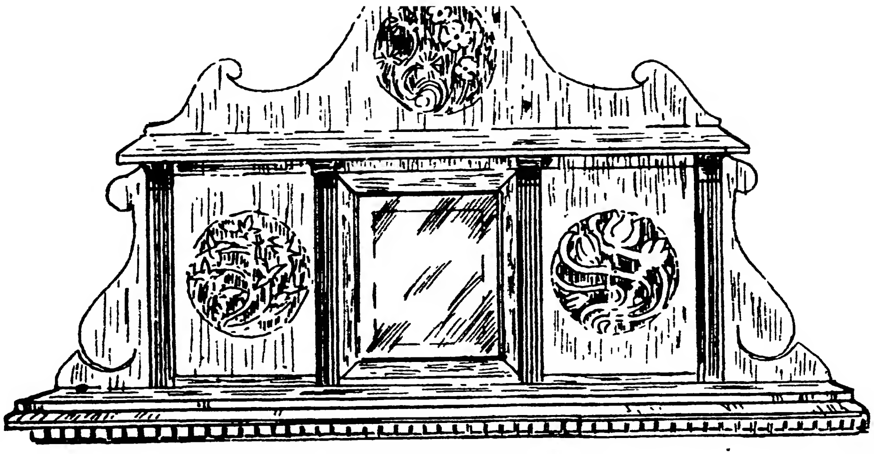


FIG. 215.—OVERMANTEL.

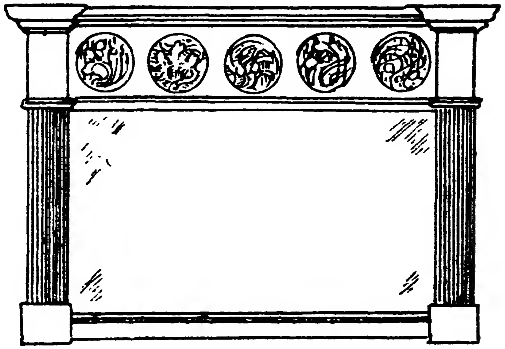


FIG. 216.—MANTEL MIRROR.

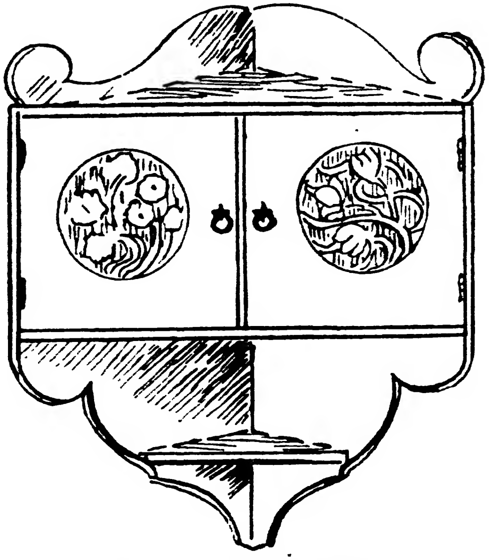


FIG. 217.—CORNER CABINET.

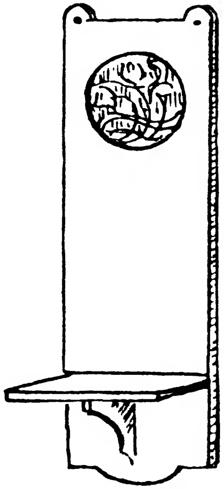


FIG. 218.—BRACKET.

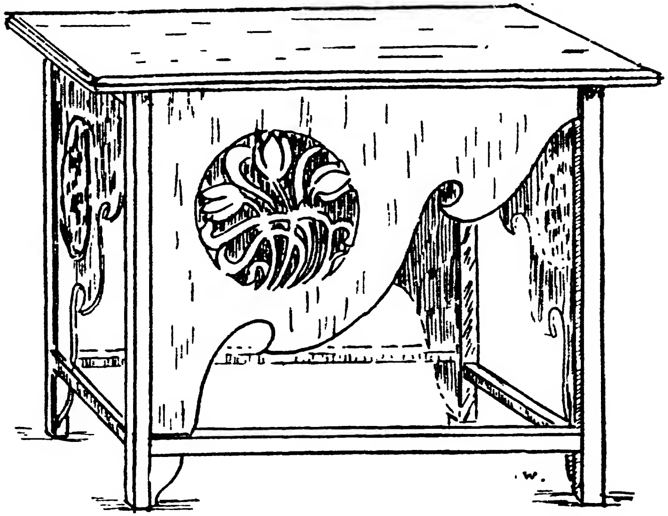


FIG. 219.—"OCCASIONAL" TABLE.

EXAMPLES OF INSERTION OF FRET-SAWN WORK IN SMALL ARTICLES OF FURNITURE.

PYROGRAVURE

(BURNT-WOOD ETCHING).

I. THE EVOLUTION OF "POKER WORK."

PYROGRAVURE (*i.e.* writing in fire), otherwise known as pyrography or burnt-wood etching, and also by the old-fashioned name "poker-work," perhaps might be described under the head of "Drawing." It certainly *is* drawing — with the heated metal point on wood, leather, or glass, just as Etching and Drypoint are drawing with the needle or the burin on metal. Etching and Drypoint are so classified in this way in the present volume; but we must not confound the merely graphic with the decorative arts, and Pyrogravure is, properly speaking, Decoration. With the development of its technical resources, through the application of the platinum point, artists and critics are agreed in placing it under the latter head, and so regarding it as a picturesque means of artistic expression. Hamerton enthusiastically speaks of pyrogravure as "a complete artist's process, full of technical qualities and satisfactions."

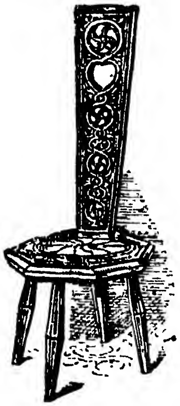


FIG. 220.
CHAIR DECORATED IN PYROGRAVURE.

As has been said, it is a form of the old-fashioned "poker work." A small kitchen poker originally was the tool actually used. It was heated in an ordinary fire and then applied to the wood to be decorated, generally for outline work of broad design. Although, naturally, somewhat rudimentary in execution, the work in skilled hands was remarkably effective, especially when the background was sufficiently burnt away to show the design in low relief.

The first improvement on the humble domestic implement was a set of poker-like points of different sizes, made especially for this sort of work, but all retaining the family likeness to the dear old kitchen emblem. With the smallest of these very fine lines could be made, and the iron could be heated in a spirit-lamp or gas-stove—certainly a much cleaner and handier method than that of resort to the open fire. But the great drawback remained, that the point could never be kept to an even heat: from the moment of taking it from the flame the process of cooling began, and hence the greatest difficulty was experienced in attempting to control the depth of the shading; and to obtain a flat, even tone required a great deal of practice, as well as technical ability. Still, the tool ploughing its way through the uneven fibre of the wood, and meeting with more opposition than it does from the platinum point, gives a rugged vigour and picturesqueness of effect not often achieved with the more modern implement. With the rounded platinum point you are too apt to get a certain uniform woolliness of line. Much of the charm of the art lies in the wonderful accidental quality of broken line work. If you perfect your instrument too much you lose this—unless, indeed, you have the touch of a genius, for a genius can work with any kind of a tool and work wonders.

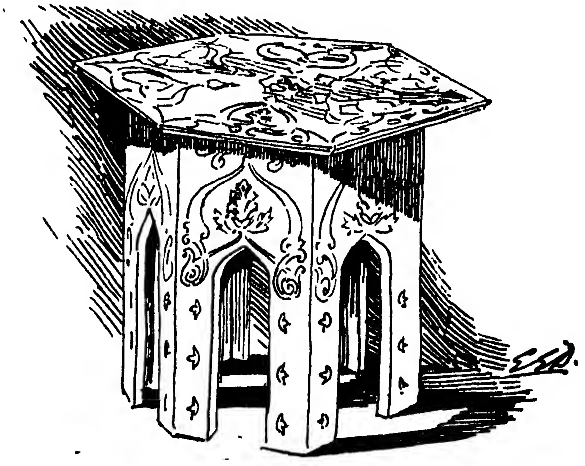
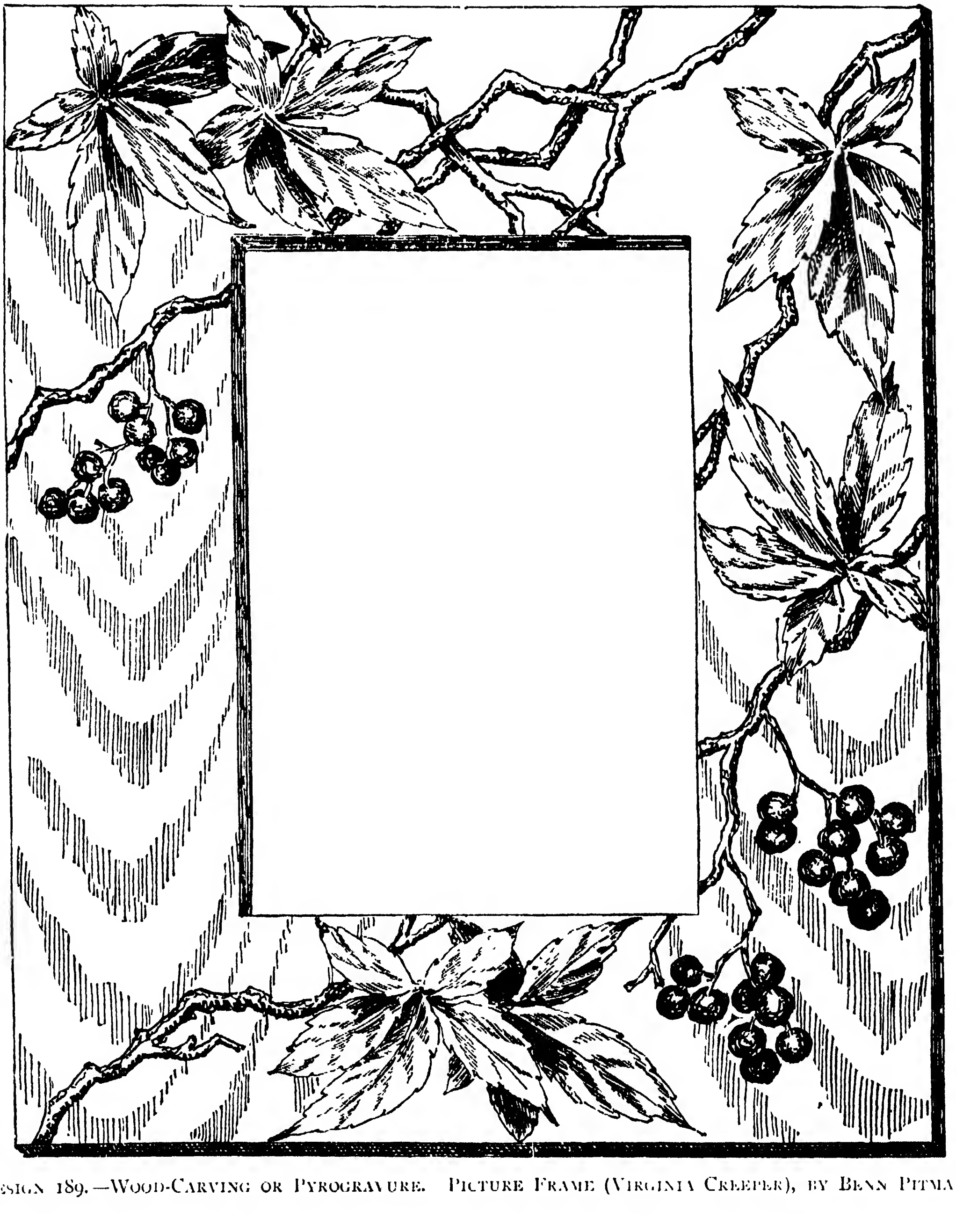
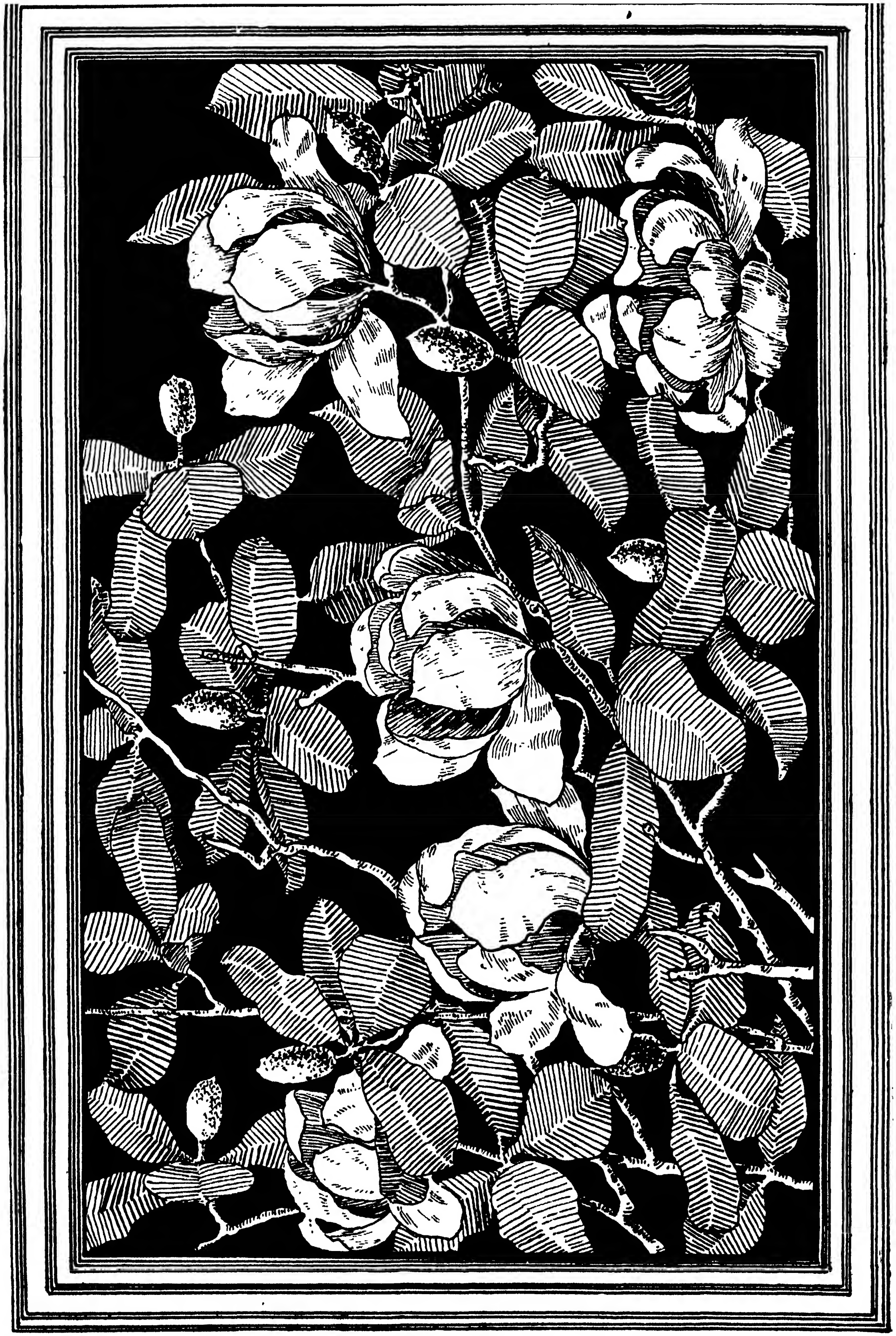


FIG. 221.—PYROGRAVURE DECORATION FOR A TABOURET (*see also* P. 345).

Pyrogravure is rather slow work. It is more allied to etching than to painting. The artist goes over and over his work, as the etcher bites



Design 189.—Wood-Carving or Pyrogravure. Picture Frame (Virginia Creeper), by Benn Pitman.



Design 190.—For Pyrogravure. Suitable for the Top of a Box.

and rebites his plate. He deepens a tone here by reburning, or works it off with emery-cloth or sandpaper and reburns it. That is a little secret of technique which has not been told before.

Any tendency toward modelling or high relief should be repressed. Indeed, in all surface decoration the best effects are obtained by the use of flat tones in combination with graceful lines. Especially in this art should the accentuated line predominate, and finicky attempts at realistic detail be avoided.

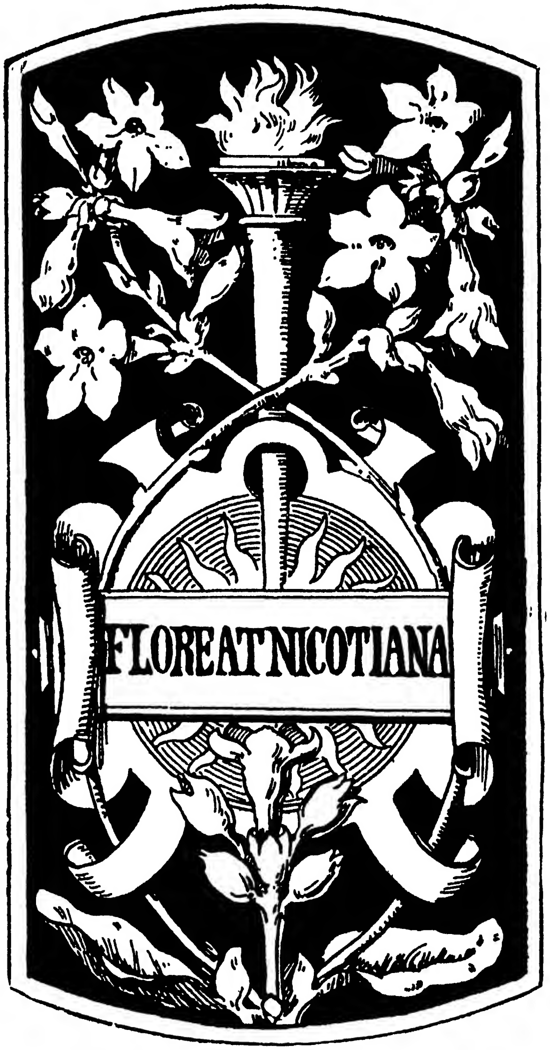
The rich quality of old carved ivory may be given to a panel by burning the background and keeping the figures light; or, if you prefer, you may reverse the process, leaving the ground light.

II. TOOLS AND MATERIALS.

The platinum point is by far the most expensive item in the outfit of the pyrographer; for platinum ranks only second to gold in costliness. No other metal has its peculiar quality of absorbing the heat conveyed by the hydrocarbon vapour obtained from benzoline. The pattern attachments for set forms and borders, being hollow, cost about half as much as the solid points. The blunt point, which is the most useful, somewhat resembles in shape that of the ordinary poker. Fine lines can be got by using it lightly on the edge; for broad lines or shading it should be held in a less upright position, so that it may more quickly cover a broad surface.

The finer point of conical shape, a useful addition in any case, is almost indispensable for small or intricate designs. It would, however, be tedious to employ it alone even for such work, its special purpose being for fine, clear outlines. For covering broadly very large spaces, there is an attachment almost flat at the end, and about twice as thick as the ordinary tool.

The curved point is much liked, especially for backgrounds. It can be made to do duty for fine or broad work; for in coarse shading it can be applied to the wood on its rounded side, while for even lines or dots the point only is brought into play. A great advantage of the curved point is that, on account of its shape, the body of the tool is kept at a greater distance from the wood than is possible with a straight instrument, thereby considerably lessening the chances of unintentional scorching, which is liable to spoil effects where sharp contrasts and great clearness are a necessity.

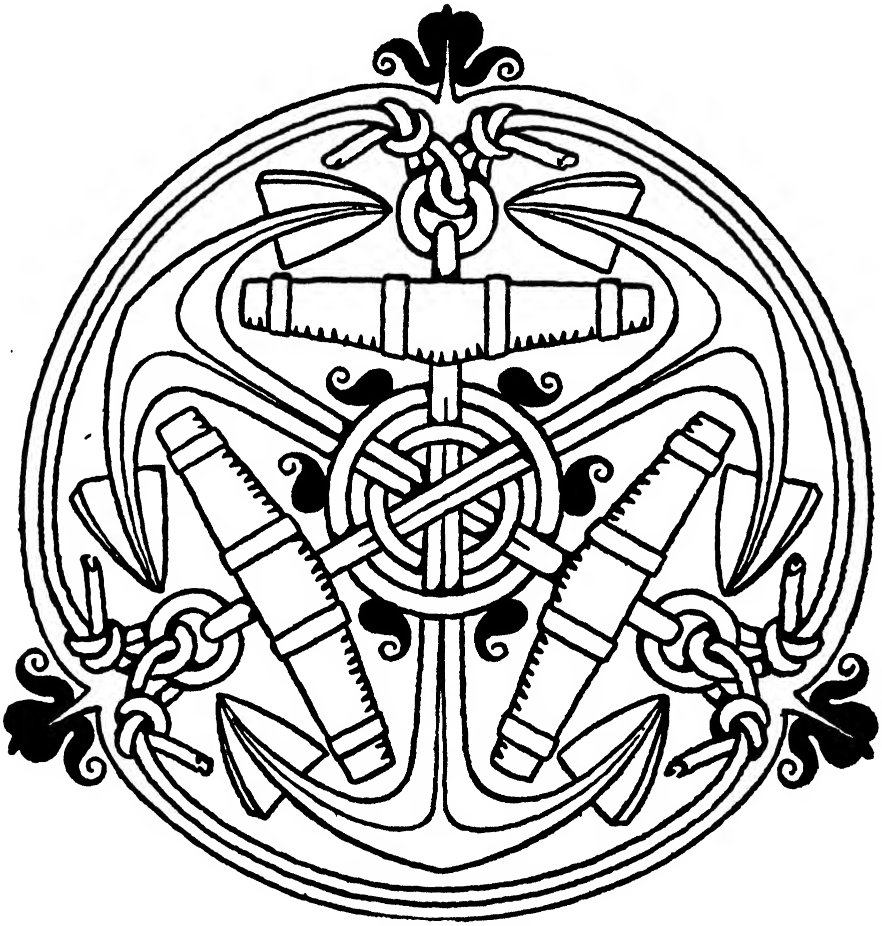


Design 191.—Pyrogravure on Leather. Cigar Case.

The motive is the tobacco plant.

The Pattern Points are to be had in great variety. The oval, circular, diamond, star, heart, and trefoil are most used, and various combinations can be made with them.

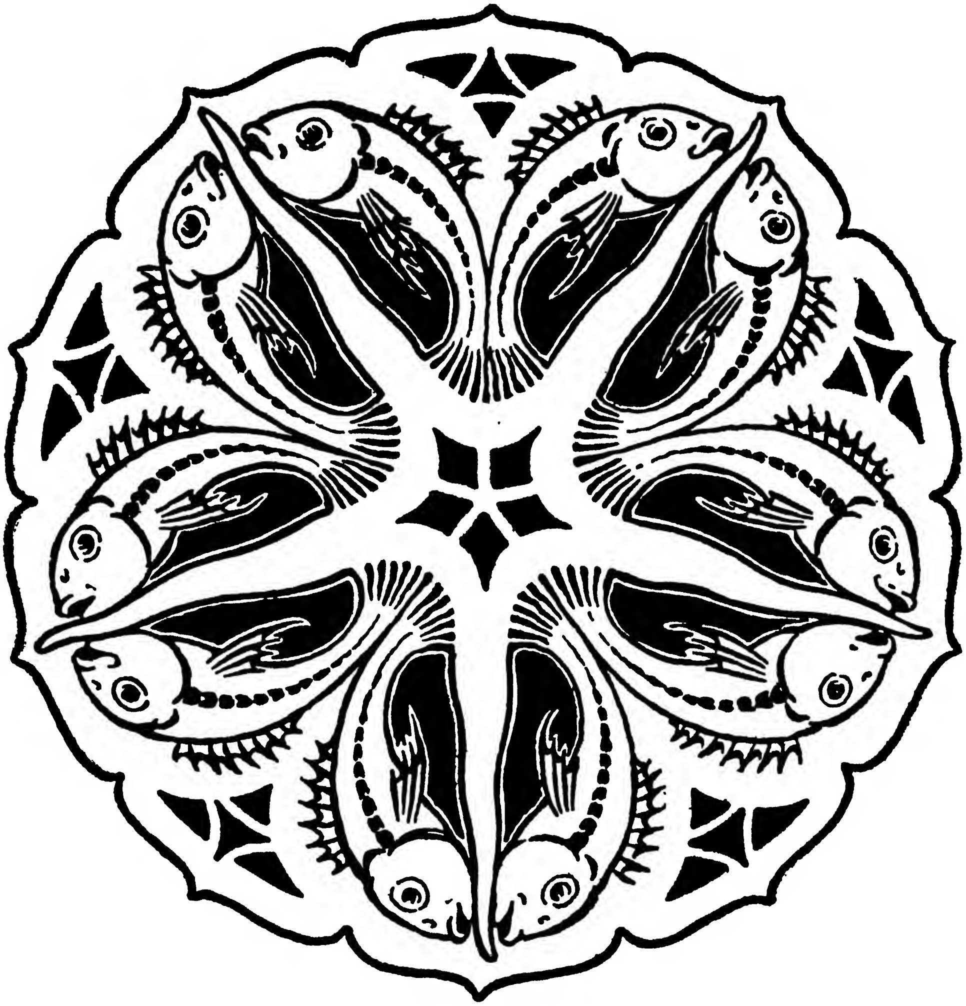
Wood.—The kind of wood to use depends greatly upon the size and character of the decoration. For the frieze of a room or a large panel to go over a chimneypiece, soft wood would be best, for it would allow of bold treatment of lines. But if you were intending to ornament a jewel-box hard wood would be best, because it lends itself to the most delicate work.



Design 192.—Pyrogravure on Wood or Leather. Nautical Motive.

Under any circumstances let the wood be as nearly white as possible, for it affords the greatest range of tones and the strongest contrasts. It should be close-fibred and it should be soft, in order to burn readily. Holly is excellent when a very light ground and strong contrast are required; it readily takes very dark—almost black—markings, so that a full range of shading is possible. Artists, like Mr. Hamerton in England and Mr. Fosdick in the United States, have recommended Lombardy poplar, for the opposition it affords between the line and the ground. It is rather difficult to get it in England, and American white wood (which has a greenish-yellow tinge) is much used instead. Pine, elm, sycamore, chestnut, and lime are more or less suitable. Oak is best for solid furniture and wainscot decoration.

Polishing.—For a finish, the wood is either oiled or varnished. Artists will use no varnish of any kind; they are satisfied to rub pure linseed oil into the wood from time to time until the requisite brightness is obtained. For those who prefer varnish we give the following directions: Apply it thickly and rub it down with pumice stone; varnish again and rub it down as before, and so on, repeating the operation two or three times until the desired polish is obtained. The varnish should be thick, and each coat should be allowed to dry thoroughly before the next is applied.



Design 193.—Pyrogravure on Wood or Leather. Suitable for a Tray or Mat.

Dye Staining.—White wood may be stained to almost any colour by means of the dyes used in printing and dyeing textiles. By their aid an object decorated in pyrogravure may be made a coloured bas-relief without hiding the grain of the wood.

Gilding and Silvering may be applied by means of gold or silver leaf with very rich effect for backgrounds. Very skilful manipulation is necessary for this process, and it is best to employ a professional gilder. Do not use (so-called) gold or silver paint, for they will certainly tarnish.

"Lustra Colours," or Bronze Powders, are sometimes used by amateur decorators, to enhance the effect of pyrogravure; but we think that no artist who respected his material would spoil his work by any such meretricious addition to it.

A Substitute for Staining.—Many of the effects of pyrogravure can be obtained more easily by a process commonly used by wood-inlayers for shading. This is the subjection of the parts of the wood to be scorched or burned to the action of hot sand. The pattern or design being traced on the panel or other object to be decorated, the parts which are to remain unaffected by the heat are painted over with flatted oil paint or, for rough work, with plaster. As soon as this has hardened, the sand may be poured on. Different shades can be obtained by heating it to any required degree, and also by allowing it to stay longer in one place than in another. Either a light or a dark outline may be obtained with much greater ease than by pyrogravure, and for graduated shadows the process is much more suitable.

III. APPLICATION OF THE PLATINUM POINT.

There are two machines made specially for burnt-wood etching, but they are essentially the same in principle, which is the application of the platinum point, continuously heated and regulated by means of a little hand bellows. The heat for both is supplied by means of a highly inflammable liquid, which must scrupulously be kept away from the neighbourhood of a lighted gas-jet so long as the bottle containing it is uncorked. The vapour from the bottle could readily unite with the flame, and would then probably cause a serious accident. Kept well corked, the liquid is no more dangerous than in an ordinary lamp.

Having, so to speak, trimmed your machine by filling the glass bottle provided for the purpose about half full, put the remainder of the liquid away at once, well corked, on a cool shelf. Now fit in the stopper, to which are affixed the two flexible tubes, terminating at one end with a hand bellows, at the other with a contrivance suited for attachment to any of the extra pattern points made for borders and geometrical work, also for sizes not in common use other than that supplied in the outfit. A small spirit lamp, furnished with a wick, is included in the outfit, for the purpose of heating the point to begin with. For this, of course, only alcohol is required. Be careful not to allow the small screw in the handle attachment to touch the flesh, because it will soon become so hot that you would be forced to drop it. Indeed, this remark applies to any part of the metal work.

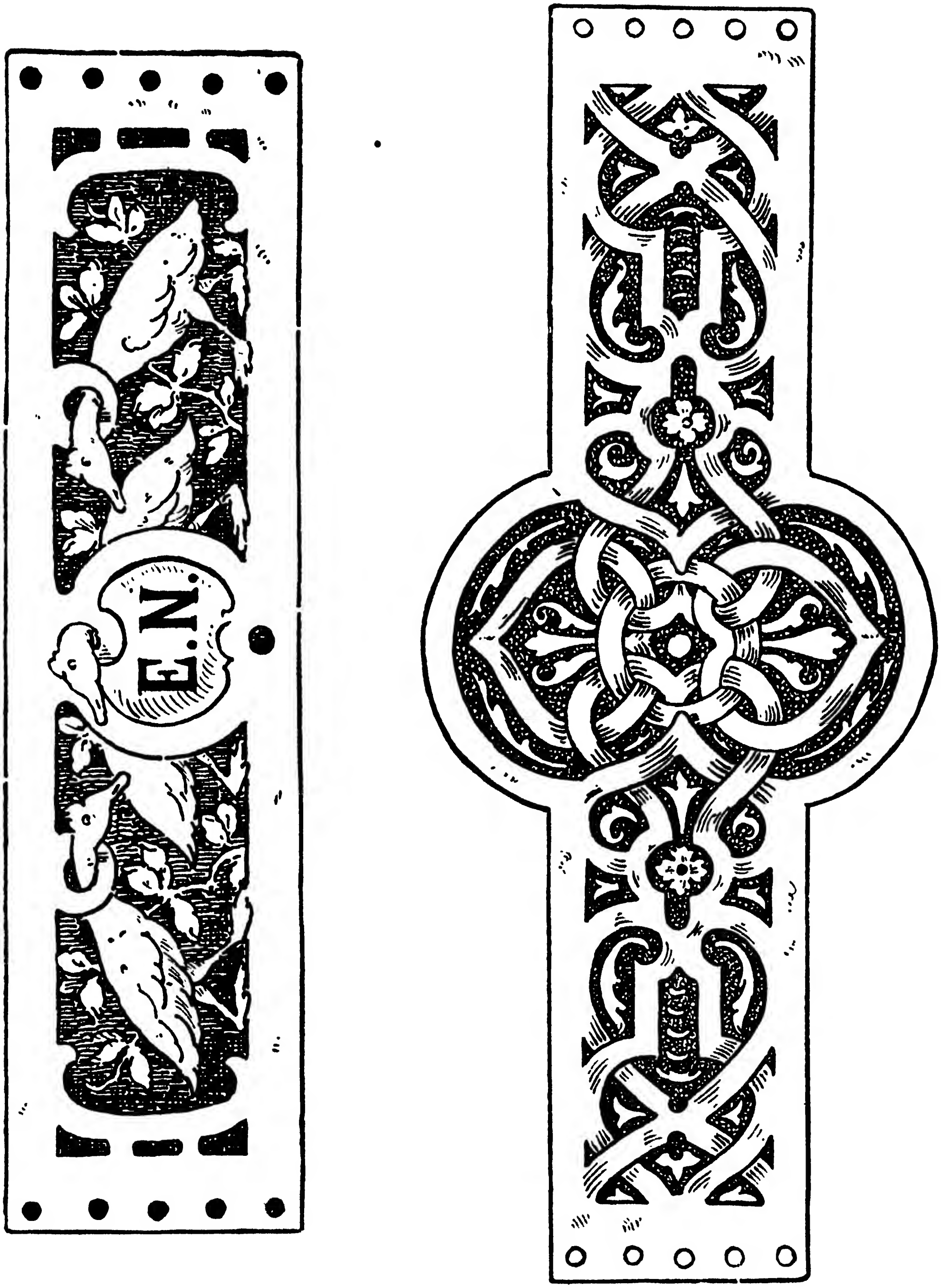
Light the spirit lamp, placed on your right hand, grasp the end bulb of the bellows in your left hand, and commence to blow very gently while holding the platinum point in the flame. In less than a minute the point should be red hot. Extinguish the lamp and set to work on your prepared design, keeping the point red hot by continually and steadily working the bellows.

If the instrument be allowed to cool beyond a certain point, resort must again be had to the spirit lamp, so as to start it again. At first, from want of practice and, perchance, from over-anxiety, there will be some little difficulty experienced in keeping up a steady, even heat, and still more in controlling it so as to suit exactly the needs of the design in hand. This difficulty will not be overcome until the action of the left hand has become almost involuntary, following mechanically the will of the worker in controlling the point of the instrument as he draws with it. Practise several kinds of strokes on a piece of waste wood until you have mastered the sensations, which are not unlike those experienced by a novice in swimming when he endeavours to put in practice the theory of the contrary action of hands and feet at the same time.

The point should be red hot even for making a delicate outline. The whole art in execution lies in the regulation of the pressure and in the even sweep of the tool. Any hesitation or added pressure will deepen or make broader the line being followed.

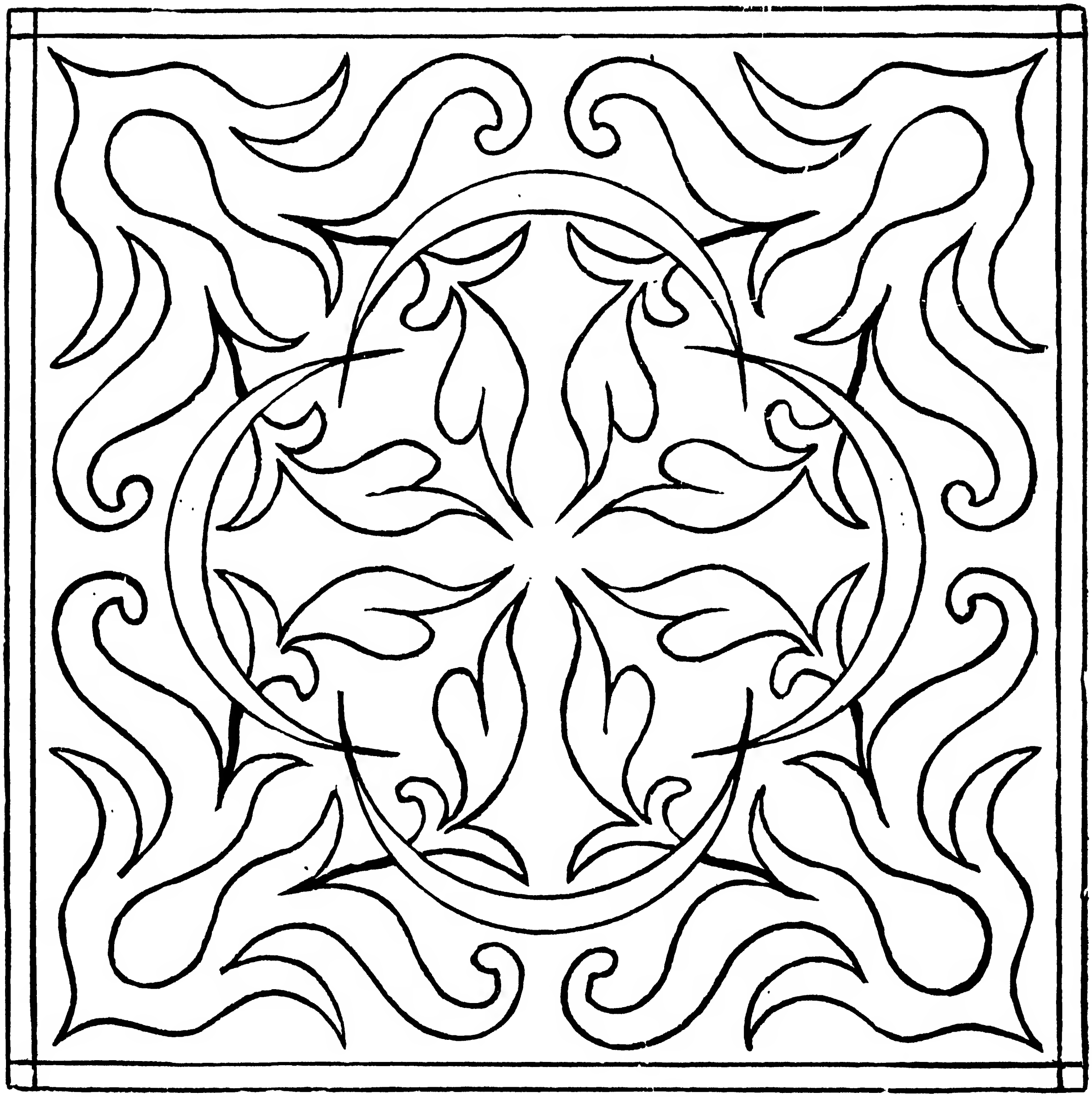
IV. PYROGRAVURE ON LEATHER.

Leather is a delightful material for work with the platinum point. You can etch on it with much greater freedom and rapidity than upon



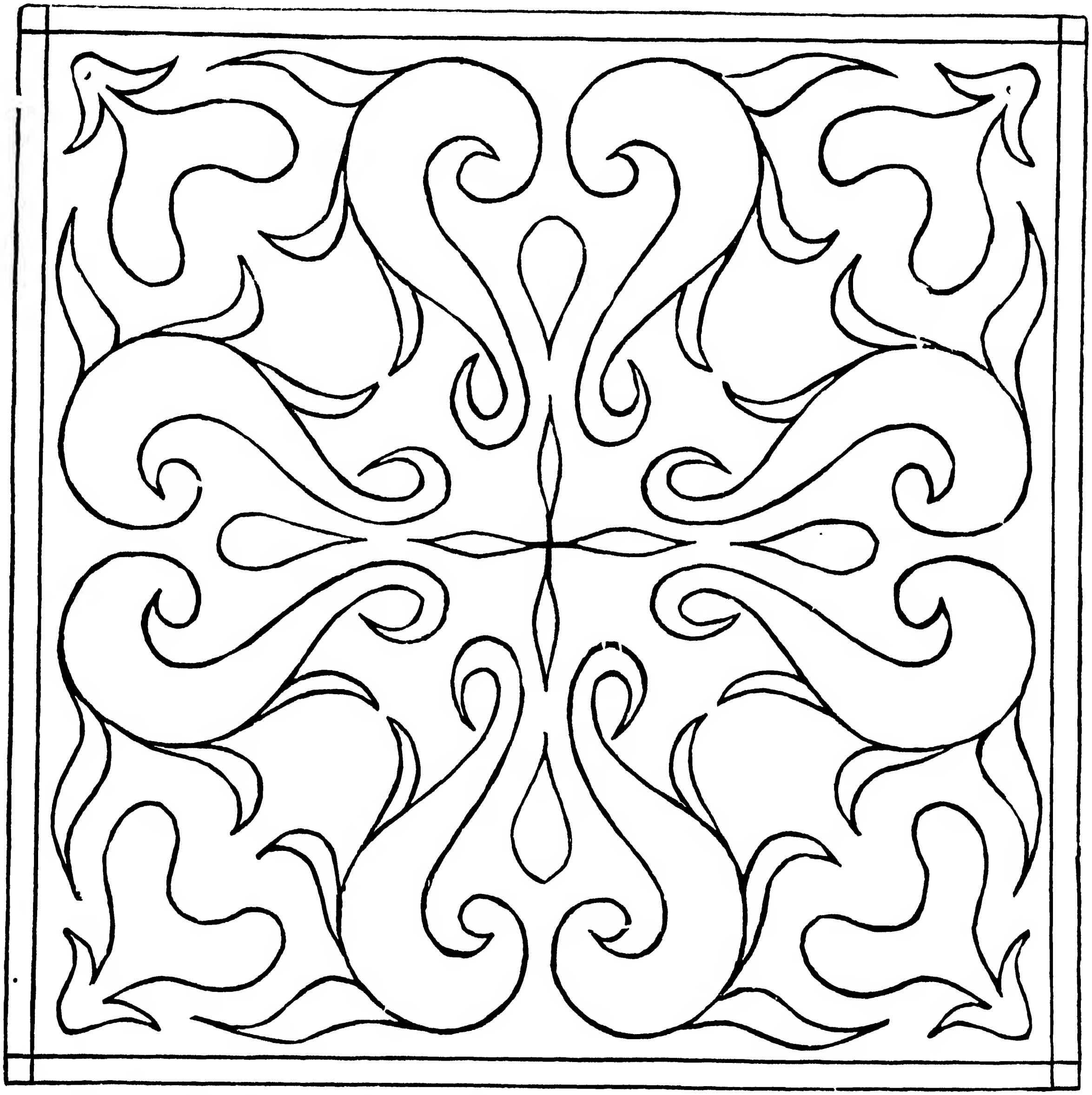
Designs 194, 195.—Pyrogravure on Leather. Decoration for Napkin Rings.

wood. The burnt line differs considerably from that on the latter. While on wood it resembles the sepia printing inks used for some etchings, on calf leather it appears more as if it were clearly cut out. Hamerton suggested the application of pyrogravure to leather bookbindings: "Tints of various kinds may be employed in many cases to complete the scheme of decoration; but even without the use of colour, mere singeing produces grounds of the finest quality on which the lighter parts may be left in relief. For example, suppose



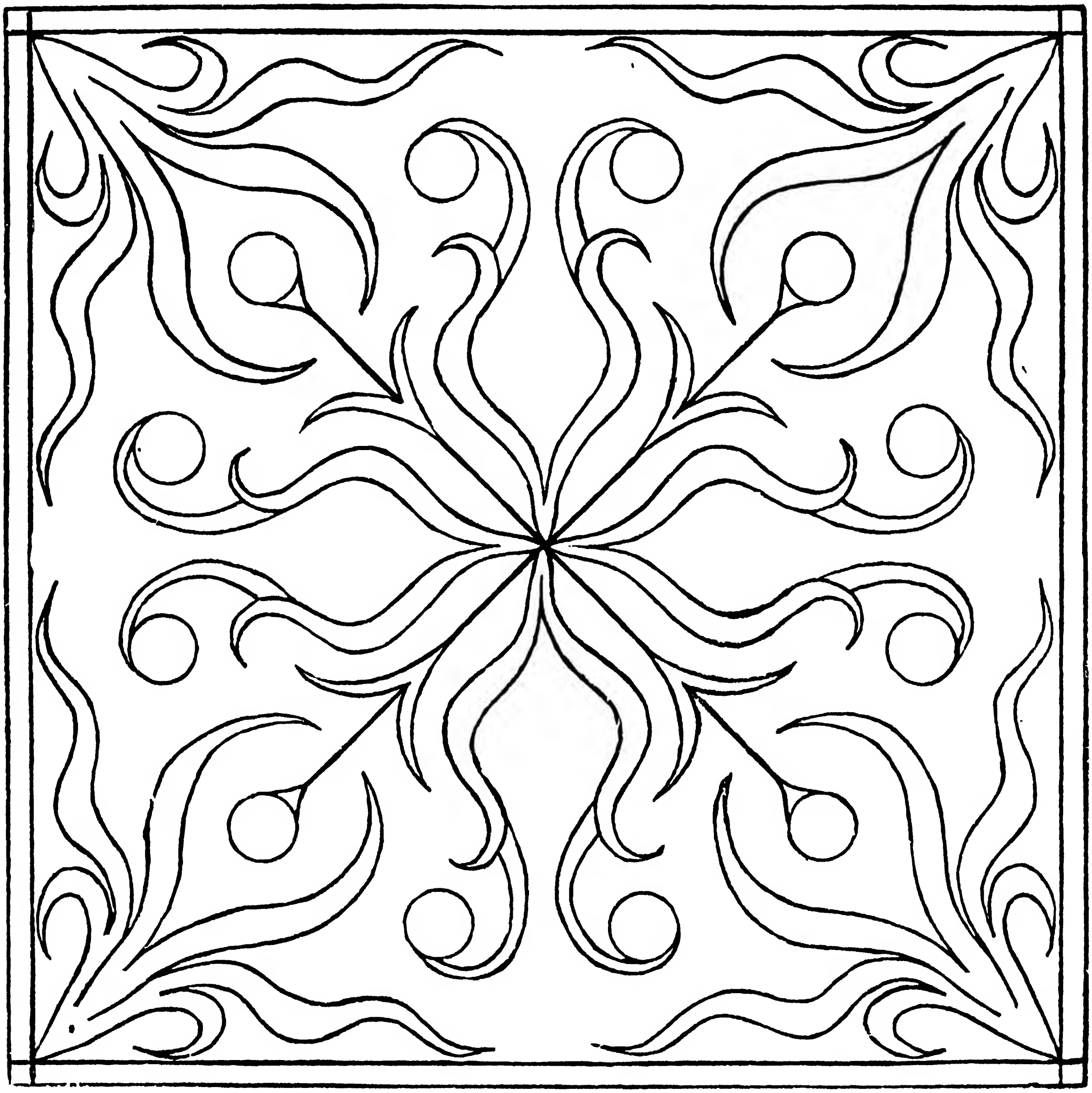
Design 196.—Pyrogravure on Leather, Wood, or Glass. Also available for Carving, and China Decoration.

the case of a wreath designed on leather, and intended to show light on a dark ground. The outlines would all first be burnt in, which can be done with extreme sharpness and definition; then all the ground intended to be dark would be more or less browned with the burner, which is not a point, and as the leaves would be left of the natural colour of the leather we have already three most valuable elements—line, light spaces, and dark spaces. But there is much more than this, as the line may be used with considerable freedom,



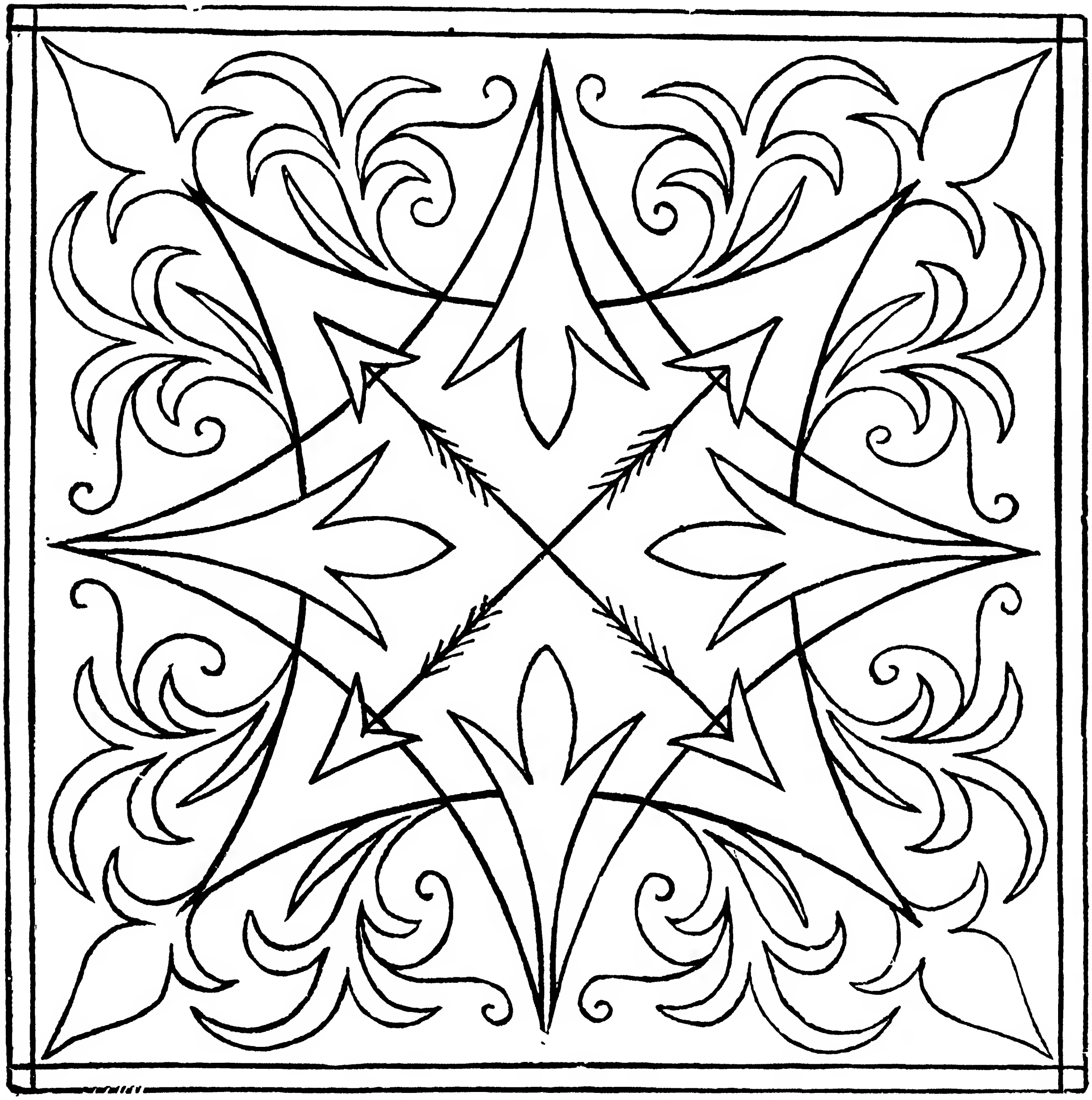
DESIGN 197.—PYROGRAVURE ON LEATHER, WOOD, OR GLASS. ALSO SUITABLE FOR CARVING, AND CHINA DECORATION.

and of the most various depth and thickness, while the shades admit of every variety of gradation."



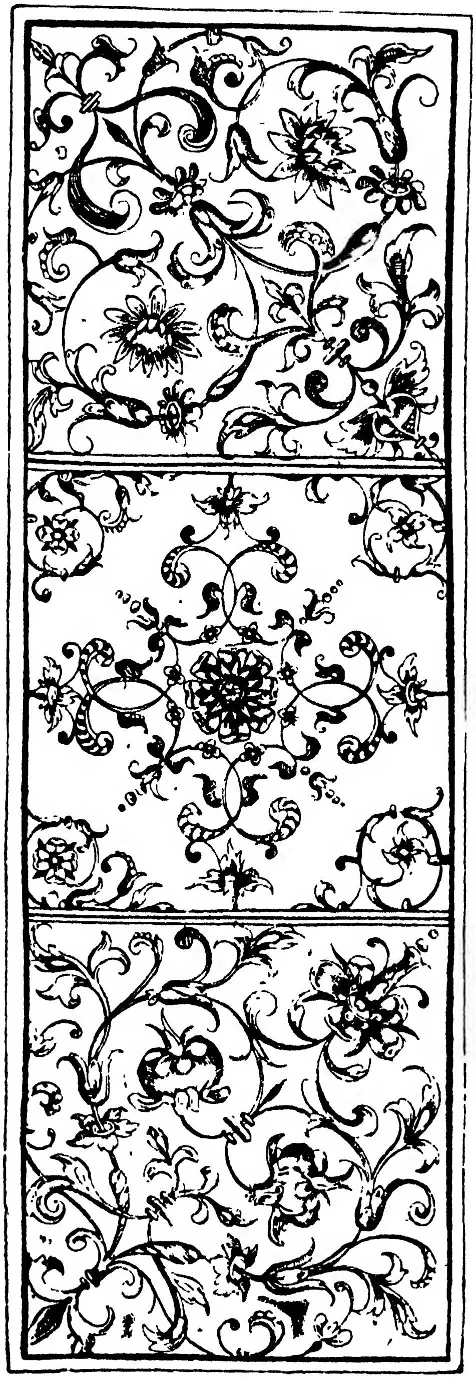
DESIGN 198.—PYROGRAVURE ON LEATHER, WOOD, OR GLASS. ALSO SUITABLE FOR CARVING, AND CHINA DECORATION.

White kid, no less than the more ordinarily used soft brown leather, lends itself admirably to decoration with the platinum point. At the stationers' shops the small leather articles that may be ornamented by this means are numerous indeed. We will only mention portfolio covers of all kinds, blotting cases, bill folders, boxes for jewels, gloves, and handkerchiefs, belts, baggage labels, calendar cases, card cases, ticket cases, covers for travelling clocks, comb cases for the pocket, cigar and cigarette cases, eyeglass cases, match-box cases, blotting pads, cases for pocket-knives, music rolls, postal-card cases, penwipers, photograph frames, razor straps, and shawl straps.



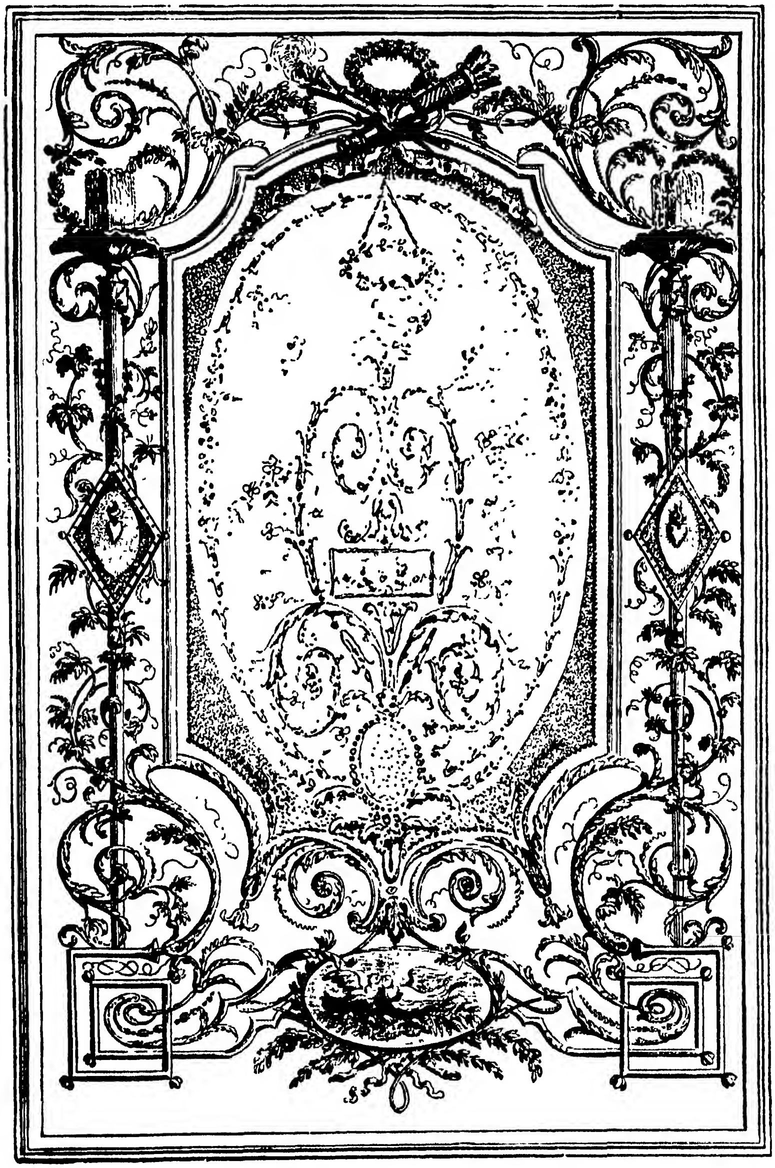
DESIGN 199.—PYROGRAVURE ON LEATHER, WOOD, OR GLASS. ALSO SUITABLE FOR CARVING, AND CHINA DECORATION.

"The trade" must need designs for many such articles. If you seek to supply them, bear in mind that simplicity is the great thing to be aimed at—the best effect that can be got with the smallest amount of work: remember that a design has to be reproduced by hand with which require to be filled with a more delicately traced design, and to be helped out by a more liberal application of painting and gilding. As a rule, blue makes the most effective ground colour, and festoons of fruit, or strap and ribbon-work in the Renaissance manner, on either side of a central medallion, will be found effective in most instances. The fruits, flowers, and borders may be touched with colour, as well as gilding, but the colours are best applied after the panels are in place, and it is possible to judge of their effect. Such designs as are commonly used in stamped leather work, lincrusta, anaglypta, and stamped wall papers may often be adapted to use in such a ceiling as we are describing; but the adapter should merely select from them such details as can be rearranged with reference to the dimensions of his panels and the general architectural scheme of the room. Ordinarily, it is well to make the design symmetrical, with a very marked and important centre.

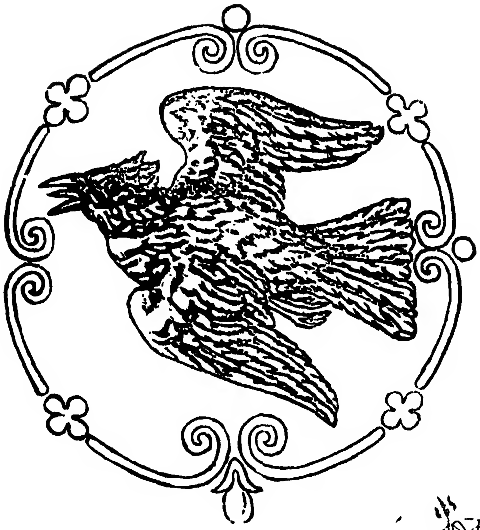

Design 201.—Panel Decorations in Pyrogravure.

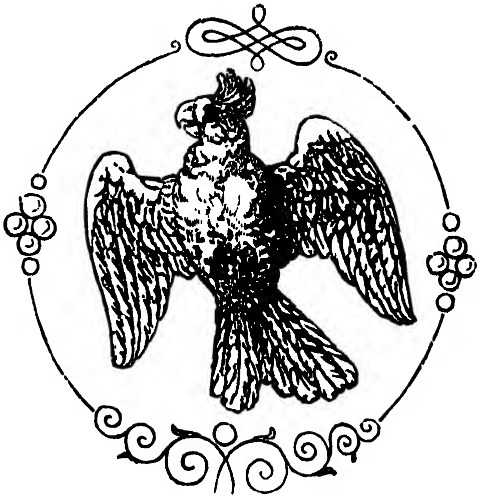
The panelling of walls, doors, and mantel calls for yet more careful treatment, and if judiciously introduced, light-coloured woods, such as maple, or, in very small panels, boxwood may have an excellent effect. In this latter case, the various methods of scorching and staining the wood come into play. Sole leather, also, gives very good and somewhat peculiar results. As it burns to a sharp edge, the line produced may be very clean and precise, while even the fine-grained woods give always a broken line. Leather has the further advantage that the background may be enriched by stamping with small hand stamps. It may be painted upon with opaque oil paints used thickly, without any preparation; or it may be silvered and then painted over the silvering with transparent colours.

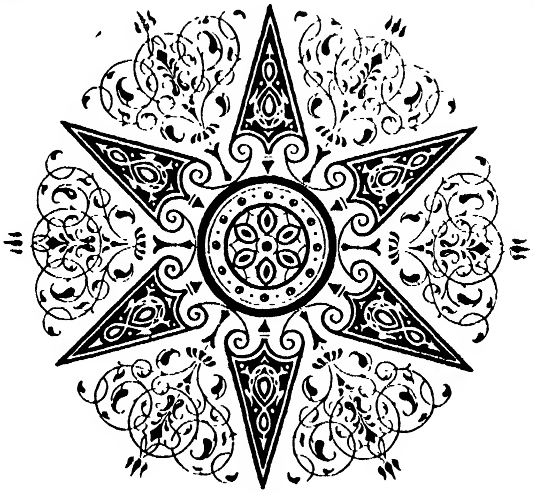
It is waste of labour to attempt to give their general form to objects by means of pyrogravure. All architectural embellishments, such as columns, mouldings, carvings in high relief, and the shaping of chair-backs and other furniture should be produced in the usual manner. The province of the pyrographer is to decorate the surfaces left by carpenter and carver. If properly executed, his work blends well with both carved and painted work, and forms an intermediate sort of decoration, which should tend to produce a harmonious general effect. In the case of oak furniture the acid stain may be used to give colour to the ground, saving out the masses of the design, which should be carefully outlined, several tools being used so as to obtain varying depths and widths of line. How pyrogravure may be applied pictorially in decoration is illustrated by our reproduction of part of a frieze (p. 351) which Mr. J. William Fosdick designed and executed for an American millionaire's dining-room.

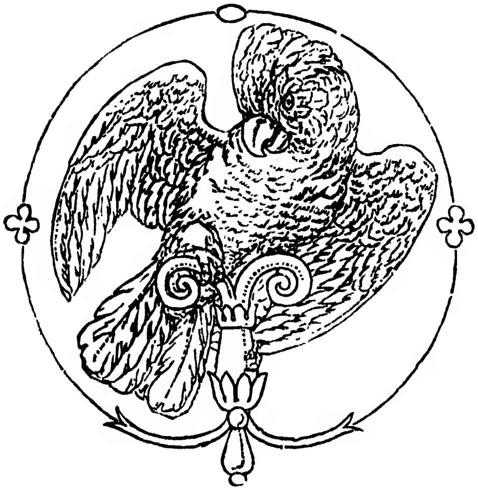


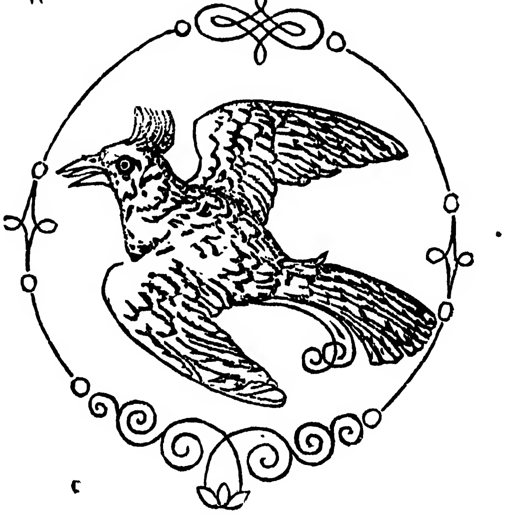
DESIGN 202.—PANEL DECORATION. PYROGRAVURE AND PAINTED LEATHER.









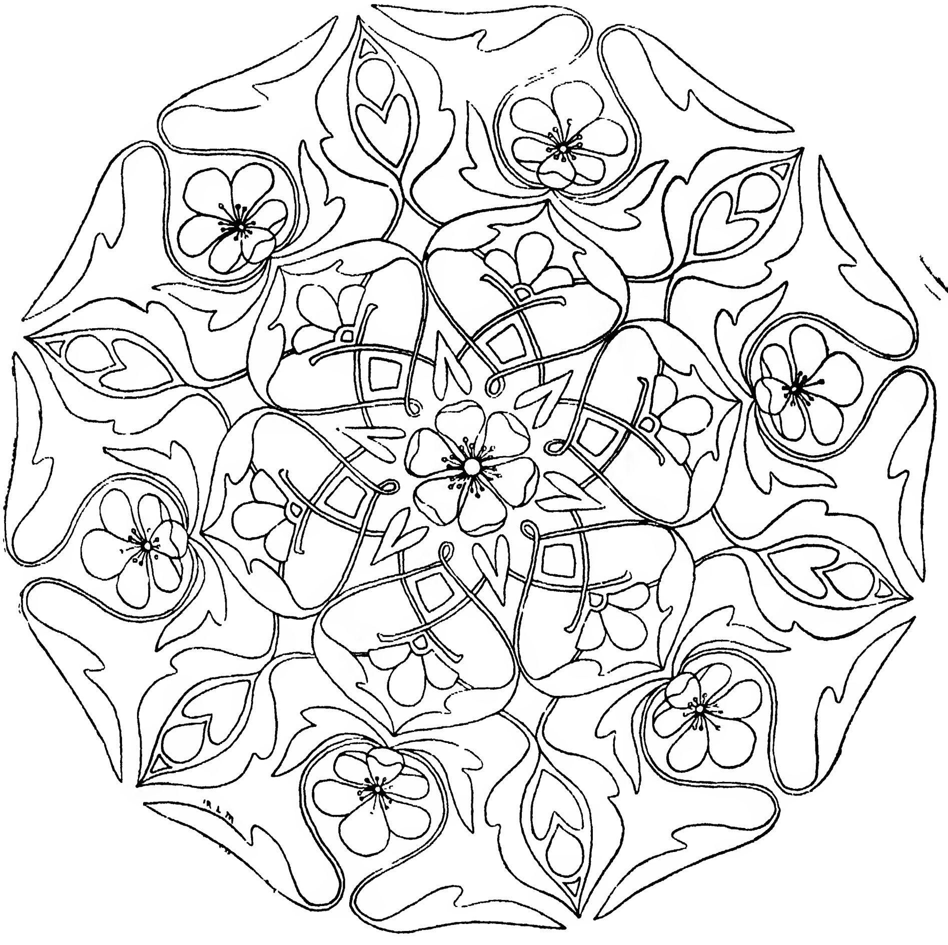


DESIGNS 203-207.—PYROGRAVURE AND PAINTED LEATHER DECORATIONS.

VII. GLASS PYROGRAVURE.

The platinum point to be used on glass must be made many degrees hotter than for wood or leather. It is not enough that it shall frequently be held in the flame to make it red hot. It must be constantly kept at almost white heat: a special point, supplied with an inner appliance for generating and retaining heat, is sold for the purpose.

The ordinary point heated to almost white heat might be used; but the process would be tedious and the point would soon get too much damaged for further service. The pressure must be steady but not hard, and the heat must be well distributed over the glass, or it may crack it.

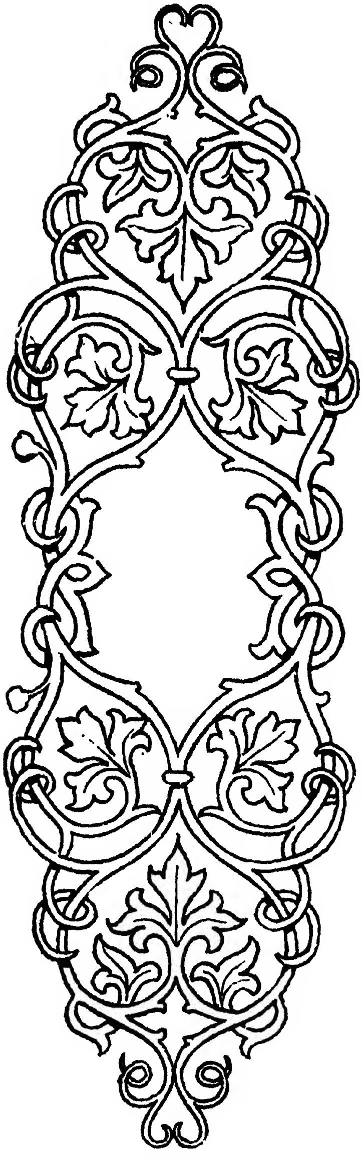


Design 208.—Pyrogravure Decoration for a Tabouret (*see p.* 328).

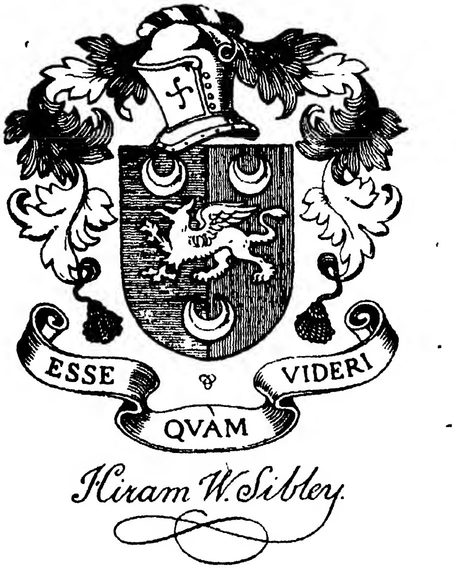
Glass Pyrogravure is especially suitable for the decoration of mirrors, fire-screens, and photograph-frames. Ordinary plate-glass is used, but it must be of the hardest kind. Except on looking-glass, there is no necessity to trace the design, for it has only to be put under the glass itself and worked over like the ground-glass of a child's drawing-slate.

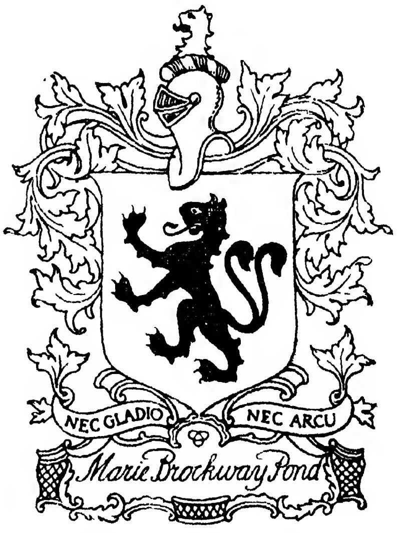
The effect is similar to that of etching on glass with acid; but, happily, it can be done without the danger of inhaling the noxious fumes of hydrofluoric acid, to say nothing of the risk of contact of the flesh with such a dangerous fluid.

Sometimes the lines of glass pyrogravure are filled in with gold paint, which show effectively from the other side. With a pad of soft cloth dampened with turpentine, the superfluous paint is wiped from the glass, which, being quite clean, is then covered entirely with a thick coat of white enamel paint, rendering the glass opaque, and giving the effect, from the back, of polished ivory with incised gold tracery. In laying the paint, care must be taken not to drag up the gold from the lines.



Design 209.—Pyrogravure Decoration for Cigar Case.





Designs 210, 211.—Pyrogravure and Painted Leather Decorations.

LEATHER AND LINCRUSTA DECORATION.

I. STAMPING, GILDING, PAINTING.

WHAT is usually called "stamped leather," made and sold by the roll, it would be more proper to term "embossed leather," for the design in relief is obtained by pressure between rollers, one bearing the design in relief and the other its concave counterpart. The manufacturers, however, occasionally produce a little work on the principle of old Venetian stamped leather, the stamping of which was done by hand, with small stamps like bookbinders' stamps. This is a sort of work which may easily be done by amateurs, and which may be developed into a home industry of some importance.

Sole leather is the only sort to use. The thin leather used for embossing will not do for stamping. If only a panel is to be made a single piece may, perhaps, be found large enough to answer; but if a considerable surface is to be covered several pieces will be required. The edges should be neatly cut, so that the several pieces may meet exactly when in place. They can be fastened to the wall with very strong glue and with brass-headed nails. The slight interruption of the design by the latter, and by the joining of the several pieces, does not count if the design is large and bold, as it ought to be. The leather may be wrought on plain if its natural colour is considered sufficient, but much richer effects can be had by first coating it with silver or tin or aluminium leaf. This purely mechanical work should be done by a competent gilder. It is well to know, however, the manner of procedure, and the amateur if he chooses can try the work himself.

To Gild Leather dampen the skin with a sponge and water, and strain it tight with tacks on a board sufficiently large. When it is quite dry, size it with clear double size; then beat the whites of eggs with a wisp to a foam, and let them stand to settle. Next take books of leaf silver and blow out the leaves on a gilder's cushion, pass over the leather carefully with the egg size, and with a tip brush lay on the silver, closing any blister that may be left with a wad of cotton. When this is dry, varnish over the silvered surface with yellow lacquer until it becomes a fine gold colour. The gilded skin is then cut into strips of the desired sizes.

Another Way is that used by the bookbinder. He first goes over the part to be gilded with a sponge dipped in white of eggs that has been beaten up to a froth and then allowed to settle; then, being provided with a brass roller, on the edge of which the desired pattern is engraved, and fixed as a wheel in a handle, he heats it before the fire until the surface will just hiss if touched with the wetted finger. While the roller is heating he rubs with an oiled rag the parts of the leather which are to receive the pattern, and strips of gold leaf, which he presses down with a wad of cotton. He then runs the roller along the edge of the leather and wipes off the superfluous gold with an oiled rag. The gold only adheres where the roller has left its impression.

Tools and Appliances.—The next requisites, after the silvered leather, is a stamping-block of some middling hard wood and a supply of bookbinders' stamps. These are small stamps engraved in brass and having long shanks which are secured in wooden handles. Their variety may be judged of from an examination of bound books in any book shop. Those that are best for the present purpose are the simpler sorts. To secure variety of effect it is necessary that some should be very "open"- that is, should have their design in outline, while others should have considerable surface. It is also necessary to have some varnishes and oil colours, a list of which will be given farther on, a few large camel-hair brushes and small sables, and a tracing point of ivory, bone or agate.

The design, having been prepared or copied on thin but tough paper, is laid over the silvered leather and traced with a strong pressure by the point so as to leave a good mark on the leather. If thought desirable, this can be gone over with a fine sable brush and brown varnish, but it is better to be careful and depend on the indented line left by the tracer.

The tools are now selected—different tools for the background and for the different parts of the design. Some parts, as flowers and foliage that are to appear in their natural colours, are left plain. As a rule, the background tooling should be the heaviest, and should be done with tools having a good deal of surface. The tools should be warmed moderately in the flame of a spirit lamp, and should be applied with a quick pressure of the wrist and arm. The work should be carried as nearly as possible up to the outline, the tools never being changed in the same part of the design.

The tooling will give the effect of a richly diapered surface, but the pattern will still be rather difficult to make out. The next thing is the treatment of the background. This may be left in silver, may be covered down with two or three coats of gold varnish, or may be gold varnished in parts, when these are entirely enclosed and shut off from other parts of the background by the lines of the design. This last plan gives a varied background of silver and gold, and is the most effective. Still, good old examples may be found in which the background is treated in opaque oil colour, commonly turquoise or other blue, the metallic effects being reserved for parts of the design. Besides the gold varnish there is also a carmine or ruby varnish which may be largely used if a red tone is desired. A varnish which may be made of a little powdered aloes, which can be bought at any chemist's shop, dissolved in alcohol, gives a warmer gold tone when used thinly than the gold varnish of the colourmen, and, when several coatings are given, a rich reddish brown. It serves admirably to tone the carmine varnish, which is of rather too bright a red. Mixed with blue it gives an excellent olive green. These will be all the transparent tints that will be required. The large camel-hair brushes are used in applying the varnish, which should be made to flow evenly and smoothly.

The background finished, the purely conventional parts of the design are best treated in varnish of a contrasting colour; or, if the background is treated in opaque colour, these can be left in gold or silver.

The oil colours, used preferably in the naturalistic parts of the design, should be mixed with varnishes of the same colour, and be applied with sable brushes. Rather dark olives are most used for leaves, as they contrast well with the bright metallic ground. White, Dark Blue, Vermilion and Turquoise are the other colours most used in good old work. They all go well with gold and the transparent tones. The following would be a safe palette for the beginner:—

Varnishes: Gold; Carmine toned with aloes; Olive, made by mixing aloes and deep blue varnish; and aloes used alone.

Oil Colours: Turquoise made by mixing Cobalt with Emerald Green; Cobalt darkened with Black; White, and Vermilion. Extreme richness rather than brilliancy of effect should be aimed at.

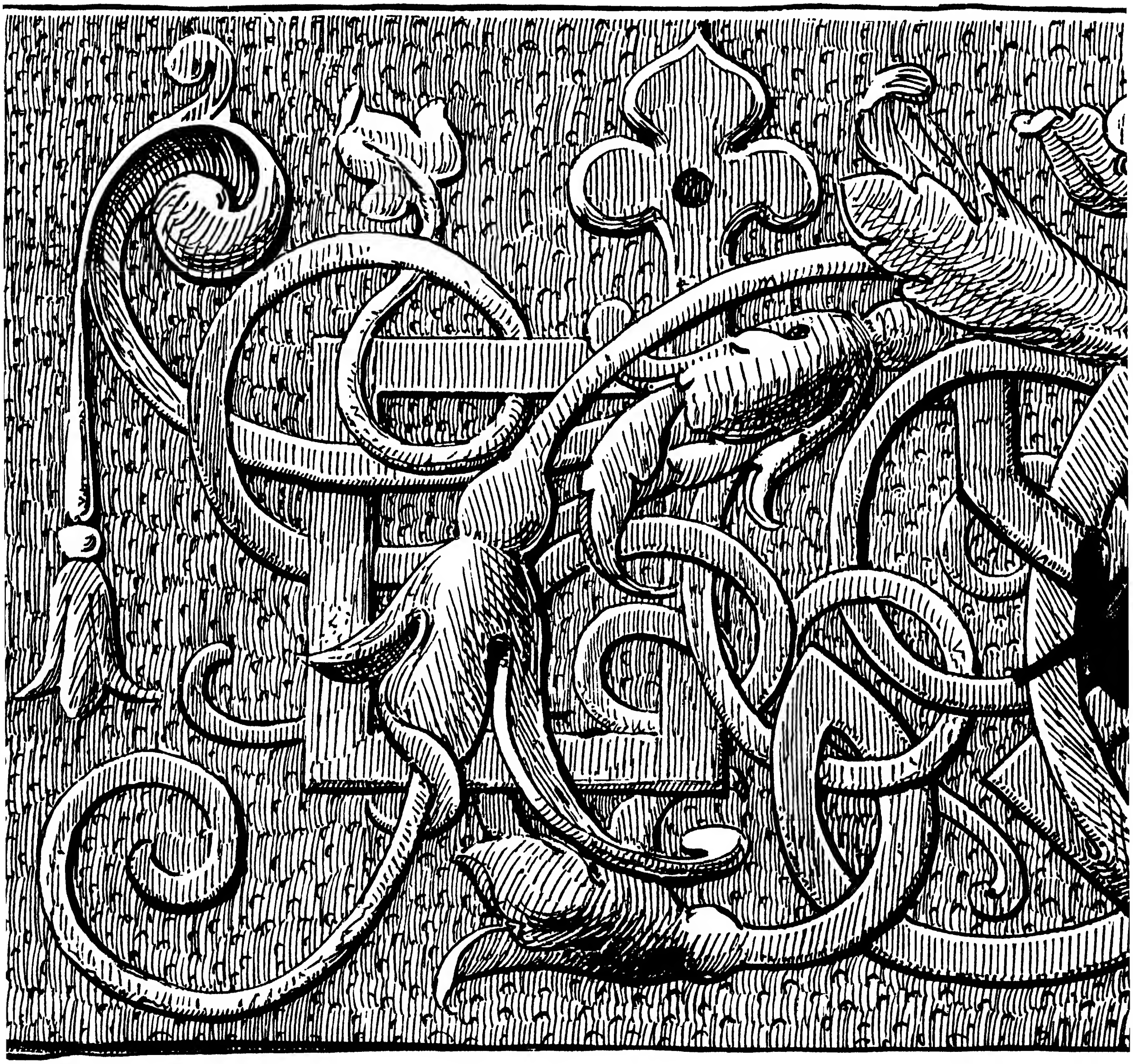
The painting completed, the outline should be gone over last of all with a very strong solution of aloes and a fine sable brush. All small details—such as the veining of leaves—can be put in at the same time.

An appearance of age and a certain iridescent quality can be given the silver before working upon it by submitting it to the fumes of sulphuretted hydrogen; but it need not be said that it is an unpleasant operation. Some people find the smell of aloes unbearable, and in that case they may be replaced, but not to advantage in any other respect, by the brown varnish of the colourmen. When the work is done the smell is imperceptible.

II. BOILED LEATHER WORK.

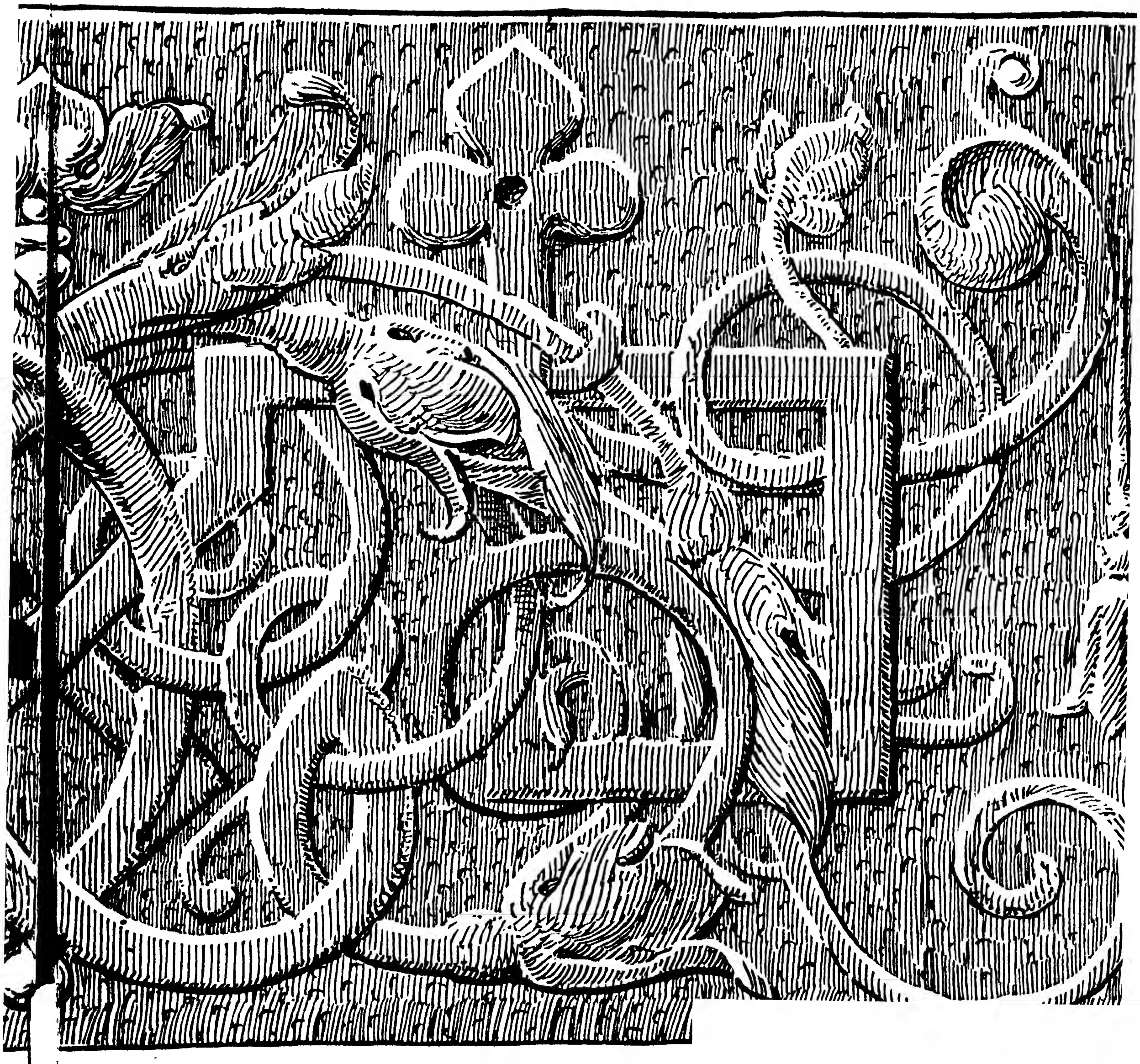
We have given some instructions as to the stamping of leather with small hand stamps in the old Venetian fashion as a preparation for illuminating or painting. Much bolder and more effective work may be attempted with even greater ease if the leather is first boiled, or merely macerated in cold water until soft

Plate H.—Full-size Design for "C



PANEL DECORATION FOR THE BAC

ıir Bouillé ” (Boiled Leather Work).



OF A CHAIR. Designed by L. W. MILLER.

enough. If alum or soft soap be boiled with the leather, the latter as it dries becomes quite hard and remains so. This is of importance in the preparation of small articles, such as caskets and cases, which require a certain degree of stiffness in their materials. For work of this nature the plan commonly followed is that recommended by Mr. Charles G. Leland in his excellent little book on the "Minor Arts" (Macmillan & Co.), which is to boil thin or "kip" leather in alum water, apply it with strong glue on a mould first carefully made of papier-maché, and work it into the intricacies of the mould and finish the details with leather worker's tools. This plan may be easy, but it is certainly tedious and more suited to the mechanic than to the artist, besides which the articles so made can hardly be of a substantial quality. A better plan is to discard papier-maché and scrap leather and choose a skin heavy enough for the purpose. The model for this, if the work is to be in all respects original, will first be carved out in hard wood, mahogany offering the best grain. It is to be carved in intaglio—that is, the parts that are to be raised in the leather must be cut away in the wood, and the hollows must be carefully rounded and smoothed with sandpaper. If the work undertaken is a large one, such as the panelling of the walls or ceiling of a room, this wooden mould will not answer. It must, in such case, be taken to a foundry and reproduced, both in relief and in intaglio, in iron; and if the use of a press can be had, the relief had better be formed into a roller. But for the work usually attempted by amateurs, which will not go beyond a few copies of a panel, say of three or four square feet, the mahogany mould will do. The design may be drawn or traced upon the wood, which may be easily whitened with a wash of Chinese White. Round and V-shaped gouges and chisels of various sizes are used in the cutting, and may be bought of any dealer in wood-worker's tools. The sandpapering is an important part of this preliminary work, as any roughness may quite spoil the result.

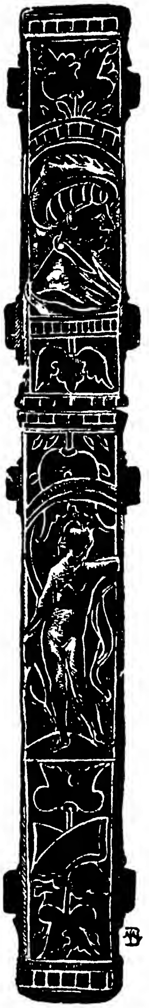


FIG. 222.—SHEATH IN "CUIR BOUILLI."

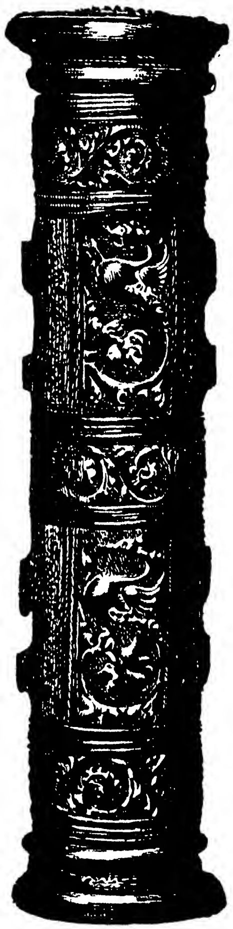


FIG. 223.—BOX IN "CUIR BOUILLI."

Italian work of the sixteenth century.

The leather being boiled until quite soft, which takes but an hour or so, is pressed quickly into all parts of the mould with a wad of newspaper; then more carefully, part by part, beginning at the centre, with the fingers; finally with wood or bone implements shaped like burnishing tools (the handle of a toothbrush may answer for one, and a set of sculptor's wooden tools may be all that will be found necessary) it is pressed forcibly into every trait of the design. While the work is going on the leather will be drying and hardening and drawing toward the centre; but it may be kept moist and soft as long as required by a sponge dipped in warm water.

It will be readily understood that, on being lifted out of its wooden mould, the leather panel will present the design in relief, but without sharpness or precision. This, however, is but a beginning. Before allowing it to dry thoroughly and harden much may be done by filling in the flat spaces by means of small stamps, as already recommended in treating unboiled leather work. Bookbinders' stamps are the best, and may be had cheaply in great variety. Small punches are sometimes used to produce a hammered appearance, chisels and roulette wheels for lines, and when very thick leather is used lines may be incised with a sharp penknife or with a narrow wood-engraver's gouge. These incised lines, cut with the knife, are very common in good Gothic work, and give it much of its peculiar character.

It is in the making of small objects that Mr. Leland advises the making of a papier-maché or scrap leather and dextrine mould, which is to remain as a backing within a slight covering of moulded leather. But it is better that this last should be heavy enough to stand alone. The mould for such an object may be prepared in a variety of ways; but the best is to make a wooden core, blocking out, as it were, the general form of the object. The ornament may be carved on this, in relief if it is to be in relief on the finished object, or it may be moulded on it with powdered leather mixed with dextrine, or with plaster-of-Paris mixed with gum-arabic and alum, either of which preparations will become hard when dry. The soft leather is pressed around this core, and the

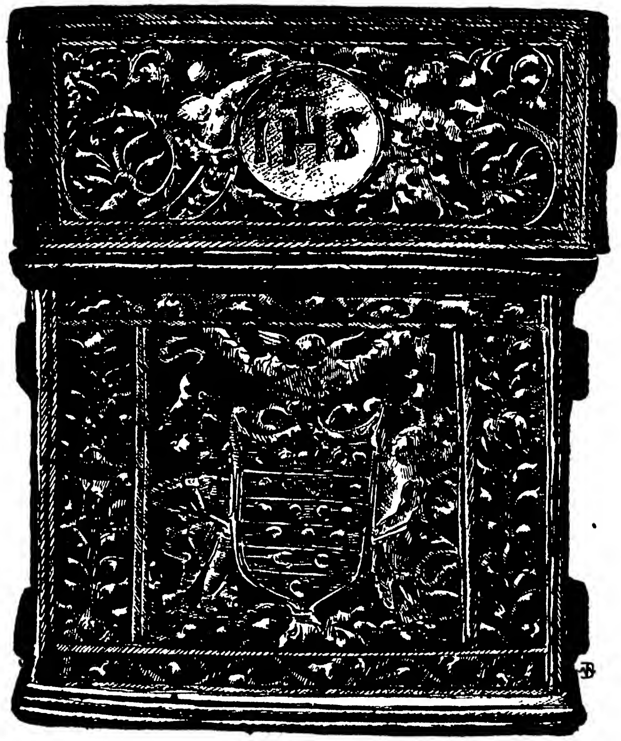


FIG. 224.—LEATHER DECORATION. BIBLE CASE OF "CUIR BOUILLI" (BOILED LEATHER).

Italian work of the end of the fifteenth century. (Formerly in the Spitzer Collection.)

ornament is finished by tooling, as has just been described. When finished a sharp knife is run through three sides, if necessary, of the object, and the core removed. The edges are joined, preferably by stitching, while still moist—a job which can be done by any cobbler. The articles can be blackened with black ink or browned with bichromate of potash mixed with water. This last stain renders it waterproof after exposure to the sunlight, but it is poisonous.

Painting, silvering, gilding, and illuminating can be done on boiled leather as well as on ordinary leather; but there are other modes of ornamentation which we have not before treated of. One of these is to press into the soft leather stamps cut out of sheet brass or other metal. The leather will swell out in the interstices, and when the stamps are removed will show the patterns in relief. If the stamps are heated before applying them to the leather the impression which they make will be coloured dark brown, adding to the effectiveness of the ornamentation. The stamps themselves may be left imbedded in the leather, and may be fastened by small rivets. Ivory, wood, and other substances may be imbedded in the same way, making a very effective though rude sort of encrusted work. Finally, the soft leather may be moulded freely by hand, just as wax or clay may be moulded, and the flat parts may be covered or partly covered with a mosaic of scraps of various coloured morocco, as in artistic bookbinding. Vellum or parchment panels boiled and moulded as above look very much like rude ivory carvings.

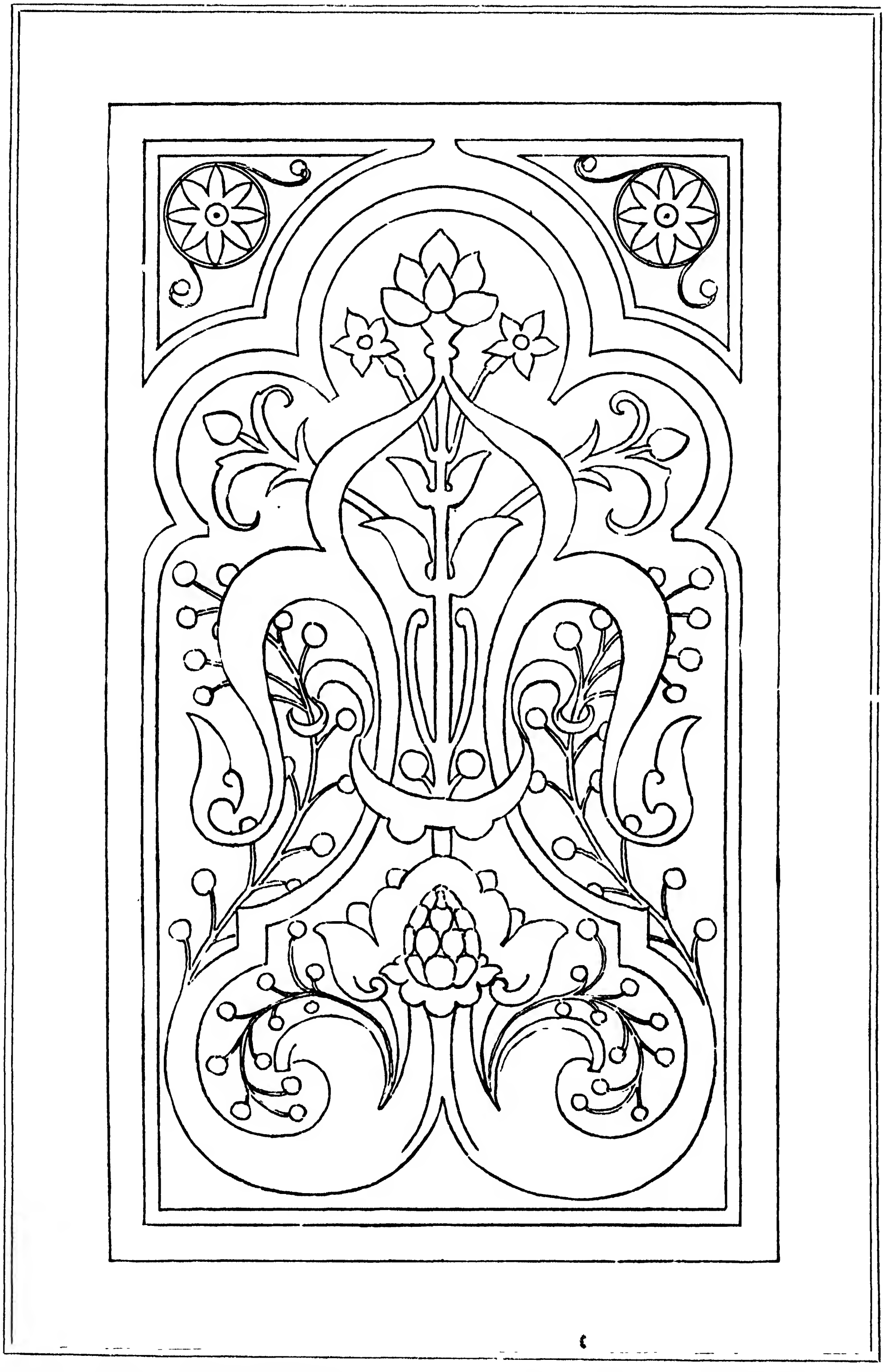
III. BOOKBINDINGS.

The principal modes of decorating leather bindings are but two in number—by gilt tooling and by mosaics of coloured leathers. The availability of pyrogravure for the purpose of decorating bindings has already been noted (p. 346). Designs for "cloth" (really coarse muslin or linen is used) are by far the most in demand by publishers, and we shall presently give some practical hints for preparing them.

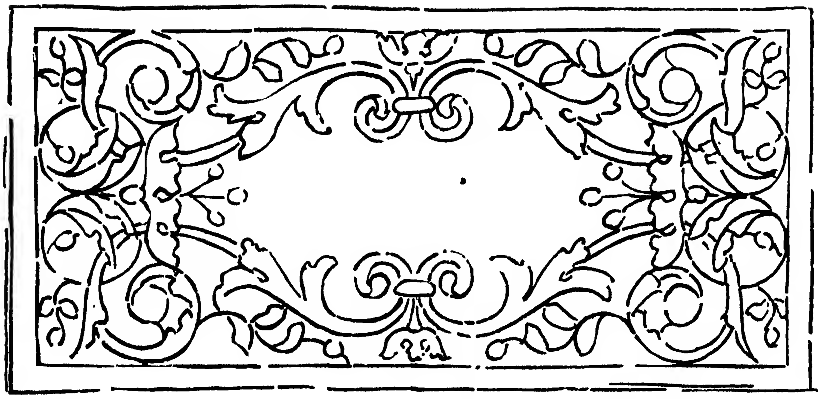
The Mosaic Mode is but little practised, and as it has had no appreciable effect on cloth bindings or cases, we will not give it much consideration. The work should be a true mosaic, but often it is only a "pastiche," the ornaments being cut out of very thin leather and pasted or glued on the leather of the ground. When they are bordered by lines impressed and gilt, as is usually the case, it may be difficult to detect the fraud. In any case, very large or very elaborate incrustations are to be avoided. The colour of the ground should cover most of the space, and other colours should appear only in small panels, or in flowers or other isolated ornaments. Yet we often see long bands, often interlaced, inserted, though if one of these become detached at a corner, the entire decoration is in danger. Flowers and other naturalistic designs should also be avoided, because they present too many angles where the leather may easily be lifted from the board.

The designer called upon to produce a design for a mosaic binding should confine himself as much as possible to geometrical forms, which he should dispose as panels, letting the leather which really forms the cover appear between and about them in broad and solid bands. He may rely on a finer ornamentation in gilt tooling to preserve his design from any appearance of heaviness. Flowers and other emblems need not be entirely discarded, but they should be strictly conventionalised and reduced as much as possible to square or circular forms. The effect of these bindings has sometimes been imitated by painting; but it is a means that we cannot commend.

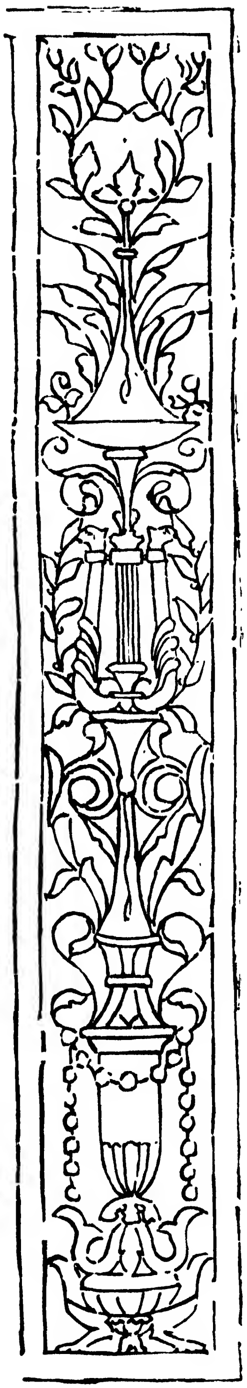
Tooling.—Of all means employed in the decoration of bindings, gilt tooling is undoubtedly the chief. The design, which must be very carefully drawn, is printed on thin paper with the tools that are actually to be used blackened in the flame of a candle. The design may be such that special tools may have to be used for it; but this, of course, increases the cost, and the designer should therefore keep as much as possible to the forms commonly

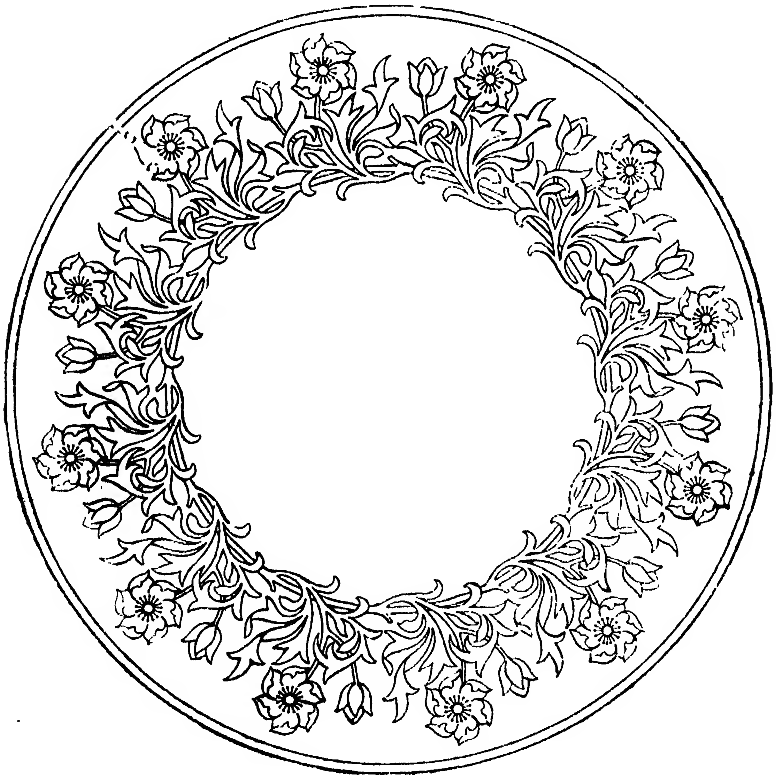


DESIGN 212.—MOSAIC LEATHER WORK FOR BOOKBINDING. ALSO SUITABLE FOR PYROGRAVURE ON WOOD, LEATHER, OR GLASS.



Designs 213, 213a.—Mosaic Leather Work for Bookbinding. Also suitable for Pyrogravure.



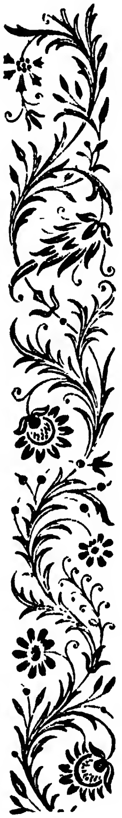


Design 214.—Mosaic Leather Work. Also suitable for Pyrogravure.

used. These are straight lines (called fillets), curves (called gouges), small circles, stars, dots, spirals, leaves and flowers. Innumerable patterns may be made with these simple elements, and the best plan will be for the designer to buy himself a set of the most usual forms only, and work out his patterns with them. Should the binder to whom the design is committed not have the same forms, he will be sure to have others nearly alike, and it makes little difference in the general appearance of a design whether a small leaf or flower be a little different from that in the drawing or not. Small tools only must be used, for it is important that the gilder should see all around it, in order to be sure that he is pressing it evenly into the leather. It is hardly necessary to add that these tools are appropriate for many other articles made of leather, as well as for book-bindings. They may be got through any large hardware house.

The design, worked out on the paper, is pasted at the corners only on the cover that it is intended to decorate, and the same tools are again applied, each in its place, to impress the design through the paper into the leather. In what is called blind tooling, that is, without gilding, this impression is merely deepened and darkened by another application of the tools previously heated. But if the design is to be gilt, white of egg is applied as carefully as possible with the point of a fine sable brush: two coatings are considered necessary; upon this the gold leaf is laid, and is forced into the original impression with the heated tools. It is generally necessary to apply a second gilding, at least in parts. If the tools are not applied exactly in the marks first made, or if the pencilling with white of egg be not very carefully done, a blurred or heavy impression will result. The finishers of the present day (as the gilders are called) are as skilful as the forwarders (those who shape the book and cover it with leather) are careless or awkward, and the amateur who competes with the regular shops in gilding will have no easy task. We advise him to content himself with making the design in the manner above described.

There are many well-known historical styles; but practically, the forms of design applicable to a binding may be reduced to a few. The boards or sides of the cover may be decorated with a border only, sometimes, but improperly, executed with an engraved roll; they may have corner pieces or centre panel only; they may have a diaper all over of the fleur-de-lis, the rose, or other emblem; or the entire space may be divided up into ornamental panelling, and the compartments filled or not with small scrolls, branches, and the like. This last, the richest and most artistic mode of design, is one of the oldest. In its plainer forms, of panels made by interlacing bands or fillets, it is known as the Grolier style, after a celebrated book-lover and collector of the fifteenth century. In some respects, no more beautiful bindings have ever been made. Straight lines predominate in them, or are cleverly combined with curves to form the outlines of the compartments, which are generally left plain except for a little lettering. Very soon, however, the compartments were filled in, at first with bold scroll-work and conventional leaves, all worked with the curved tools called gouges, with the occasional aid of tools copied from the printers' ornaments then in use. Later, very rich designs of branches with small and large spirals, leaves, and flowers were used, and these, in turn, were supplanted by the finest filigree work in the seventeenth century bindings attributed to Le Gascon. Little or no progress has been made in designing for tooled bindings since this time; but the technique has been perfected to the utmost.


DESIGN 215. "TOOLING" FROM AN OLD BINDING.

The design given on p. 362 is a fair example of the more elaborate modern adaptations of the old Grolier bindings.

LINCRUSTA, OR ANAGLYPTA DECORATION.

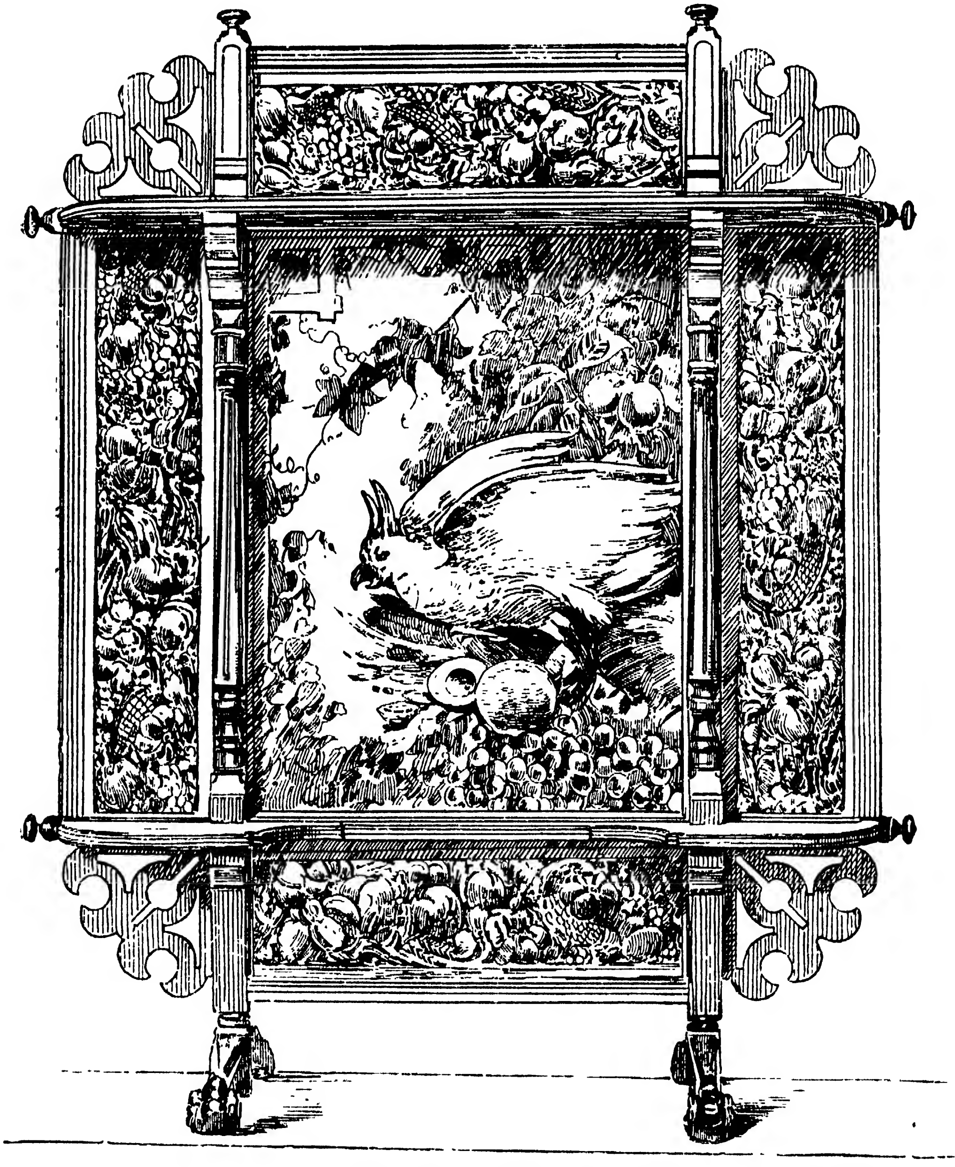
Lincrusta, or its competitor Anagylpta, lends itself readily to surface decoration in the manner of leather. Ordinary oil colours may be applied as easily as to leather or wood. But it is to the former that these two patented materials are most akin, although we have not heard of any one who has tried the boiling or macerating experiment with them. Gold and silver leaf adhere to them as they do to leather, and these in turn may be tinted to any shade by thin washes of transparent coloured glazing varnishes. Capital effects can be obtained by giving to the material some delicate shade or gradation of shades in oil colours, and, when dry, drawing a flat brush, charged with gold or other bronze powder, rapidly and lightly backward and forward over this tinted surface. The raised rib or grain catches minute particles of the metal in powder, with the effect of colour seen through a film of gold. The brush should be held horizontally, and only as much bronzing liquid should be added to the gold as will enable it to leave the brush easily. A thin coat of white shellac varnish subdues the brilliancy of these effects, but adds to their permanency.

For oxidised silver, cover in silver leaf, or, if preferred, in one or both silver bronzes. Glaze the silvered surface with white shellac varnish ; when this is dry rub a brush well charged with dark blue-gray oil colour into all interstices of the ornament in relief, as well as upon the background, leaving the colour thickest upon those portions of background more immediately surrounding the raised ornament ; now remove the colour from the highest points by rubbing with a soft cloth tightly folded, and pass a clean brush over those parts in lower relief that require to be left in half-tone. Duller yet more artistic effects are produced by using "dry colour" in powder for the deepest shades. It is of importance that these colours lie thickest on those parts of the design thrown most into shade, and, as in natural oxidation, the surface forming the background should have fewer and more subdued lights than the more prominent parts of raised ornament. A careful study of some piece of silver oxidised by nature will help the reader more than many words ; and every little grace of burnished light and softened shadow, noted on the true chasing and transferred to the work in hand, will give to it further beauty.

For a fairly permanent bright green bronze, paint over a first coating of brown dryer, a second of copper bronze in powder, mixed with bronzing liquid ; dry thoroughly. Over this draw a brush loaded with green bronze powder, also mixed with bronzing liquid ; clear the high lights by rubbing with a soft cloth, allowing patches of the copper to show through on the background also. Dry well, and heighten the effect by drawing a brush, containing pale gold bronze, damped with bronzing liquid, and held horizontally, rapidly backward and forward, catching lightly the prominences. When dry, coat once or twice with white glazing varnish.

This again may be toned, where more subdued effect is desired, by a thin wash of Terre Verte (oil colour), thinned with boiled linseed oil, and more rubbing with a soft cloth, to bring out, or keep under, the various portions of relief. For the effects of Florentine bronzes, copper and various shades of gold bronzing powders are used, with Vandyck Brown for shades. For antique bronzes use the same materials as for "bright green bronze," laying first a ground of green oil paint to obtain depth in shade. When the lights have been "picked out" in coloured bronzes rub a little beeswax softened by turpentine to a thin paste, and mixed with a very little of the brown dryer, into the deepest shadows of your panel, and a few moments later pass over them a brush laden with Paris Green in fine dry powder. Care should be taken not to inhale the particles of loose powder that fly off during the final polishing with a soft cloth or chamois leather.

Some of the lincrusta and anaglypta are embossed expressly to assist the decorator. The most brilliant effects are attained by first preparing a ground of gold or silver, then painting in strongly, with coloured glazing varnishes, the raised pattern. As these dry with great rapidity, an equal rapidity is required in the laying of them. When a wash of toning colour has been laid evenly upon the background, and over some portions of the ornament in low relief, leaving bare the remaining spaces of bright crude colour, pass a coat of white glazing varnish over the whole, and finish by taking a sprinkling of gold dust or bronze powder upon a soft bristle brush, and polishing the surface briskly, finally using



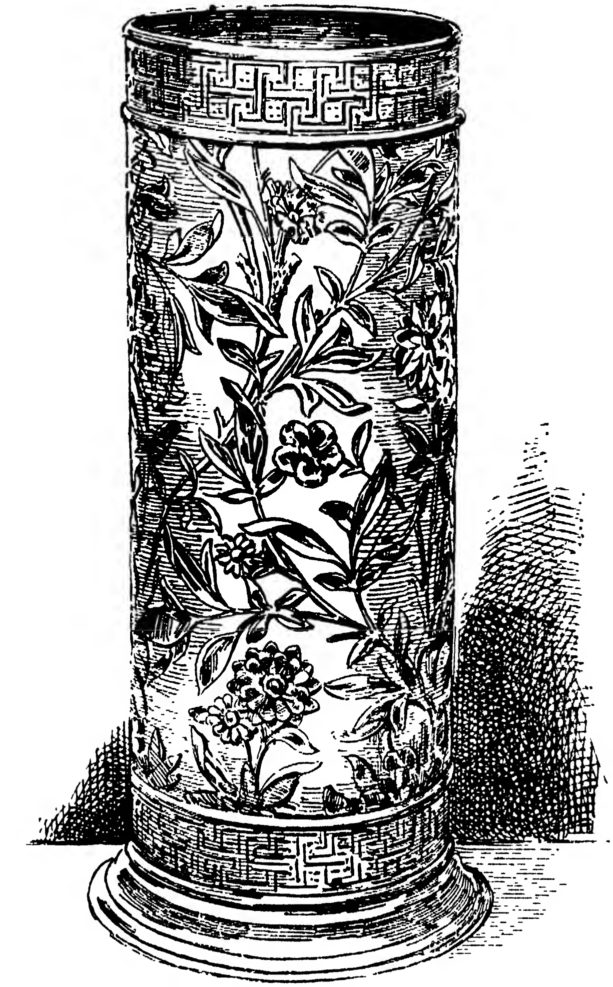
DESIGN 216.—LINCRUSTA DECORATION. DWARF FIRE-SCREEN OR MIRROR FRAME.

The border is in lincrusta (bronzed and tinted). The centre panel is in painted tapestry. (See p. 203.)

a chamois leather or a well-worn flannel cloth. This last process blends and harmonises the colouring purposely kept crude until the end. Darker leathers may be coloured by adding brown dryer and bronzes in powder to oil colours, taking the precaution to mix them well together with a palette-knife.

The fire-screen shown in the illustration is an example of how a border of "fruit pattern" in relief, bronzed and tinted, may be utilised in conjunction with hand-painted tapestry. A bevelled mirror may be substituted for the latter.

A panelled dado of lincrusta or anaglypta, decorated in white and gold, sets off admirably tapestries in Watteau and Boucher styles; add frieze and borderings in rich relief, or severely graceful, repeating or harmonising with tones below, and supporting a ceiling of delicate tracery, framing medallions of cupids and flowers in painted tapestry, letting the decoration melt toward the centre into delicate gradation of soft blue sky, and some idea may be formed of what can be done with the aid of lincrusta or anaglypta.

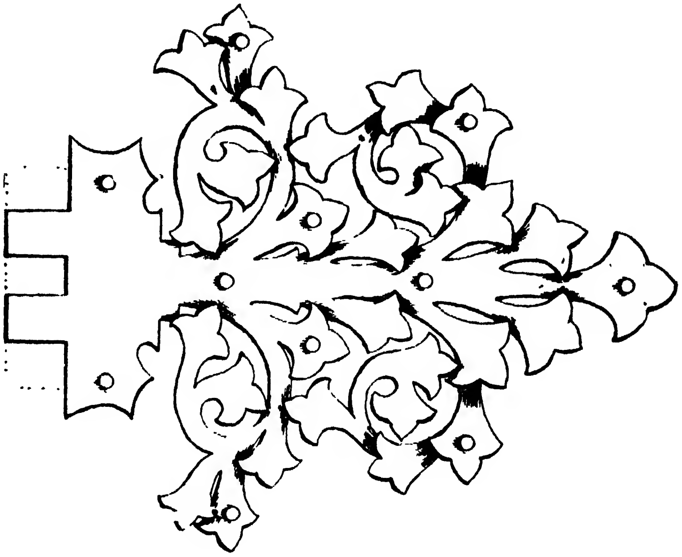


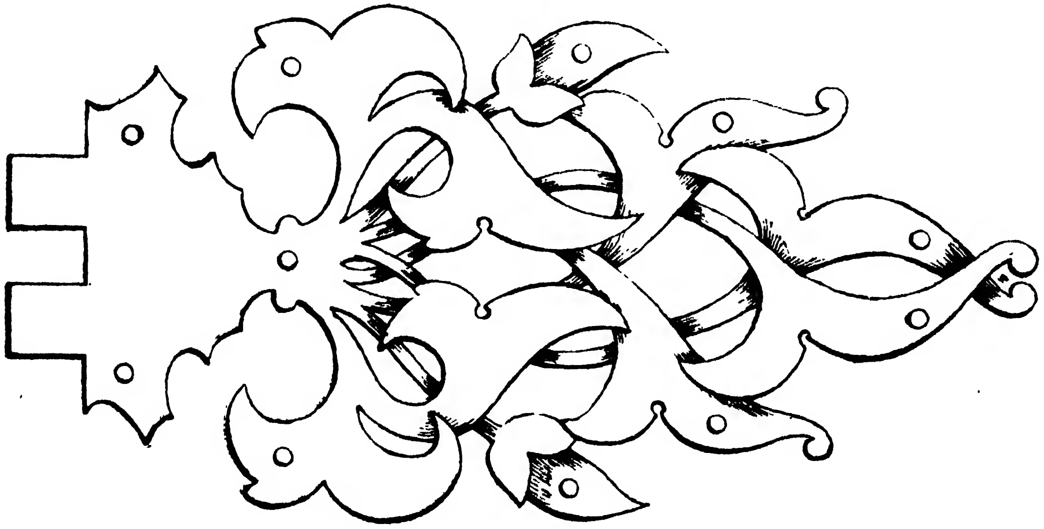
DESIGN 217.—BRONZED AND TINTED LINCRUSTA DECORATION. UMBRELLA HOLDER.

METAL WORK.

SAW-PIERCING.

METAL is hardly more difficult than wood to work with the fret-saw. The designs given for the latter (p. 337) will look very well cut in sheet brass, copper or German silver, with perhaps a few touches with the graver here and there to bring out parts that appear to overlap, or suggest the veins of leaves or markings of flowers. Etching may be employed with better effect for the same purpose. It is also a useful accessory to the decoration of cut metal in connection with wood-carving. The metal work, to be effective in this case, must be confined to those features where a real or seeming added stability is introduced by the employment of the metal decoration: such, for example, as strap-hinges and lock-plates on cabinet doors; decorative hinges and corners on caskets; or handle and lock-plates on drawers.





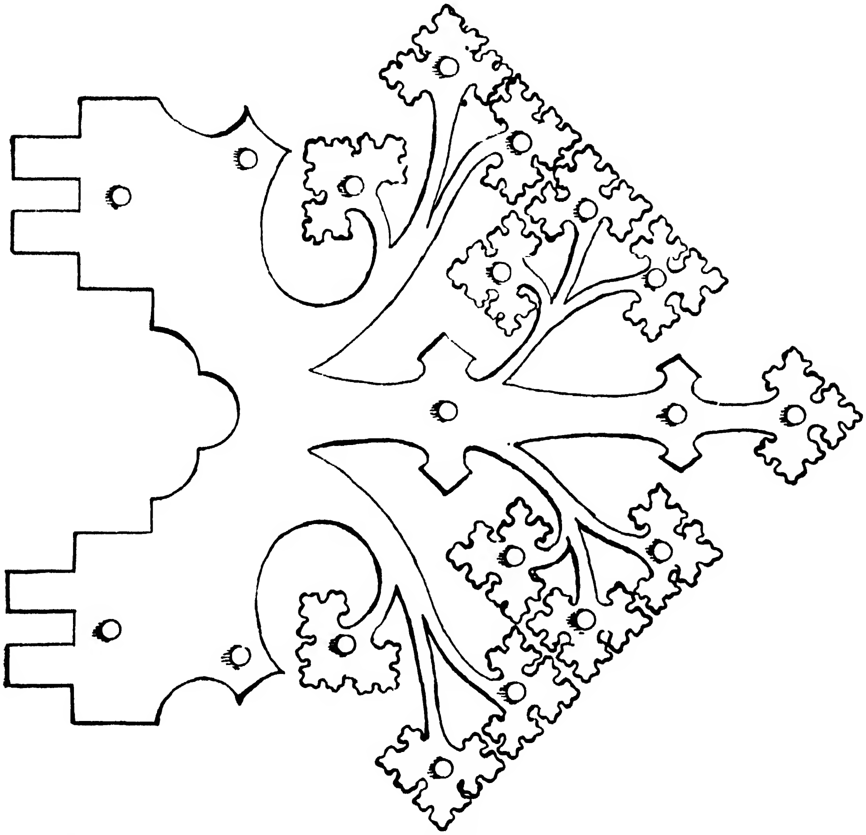
DESIGNS 218, 219.—SAW-PIERCING. CASKET HINGES FOR 1½-INCH BRASS BUTT.

First make a paper or cardboard pattern of each part of your object and test the parts by pinning the cardboard patterns of them in place upon the wood. You can thus prove whether or not you have measured and drawn them correctly.

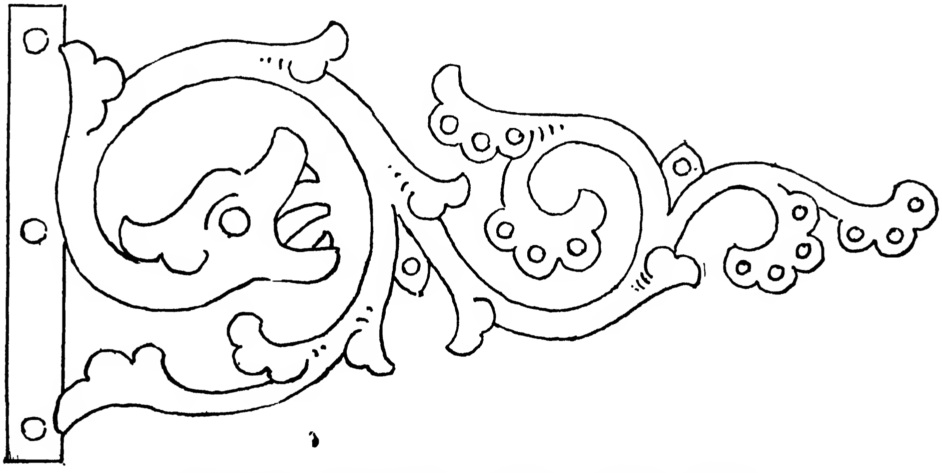
Sheet metal of any thickness can be obtained of the dealers. No. 22 or No. 24 (thinner) i recommended for decorative hinges, handl plates, etc. The surface should be polished with powdered pumice-stone and finished with rotten-stone. If the best results are desired, the metal should be sent to be "buffed," by which a perfect polish is obtained.

The etched brass hinge, design No. 222, is one of a pair that was used on the doors of a small cupboard 9 inches above the top of a writing desk. The doors, each 12 × 4 inches, were too small for any effective carving, but yet occupied a position demanding effective treatment. This was secured by covering the doors with a bold and elaborate design in metal.

Hinges of this description can be attached to ordinary brass butts by knocking out the pin and using *half* of the hinge that contains the three "bends," to which is attached (after bending the two projecting

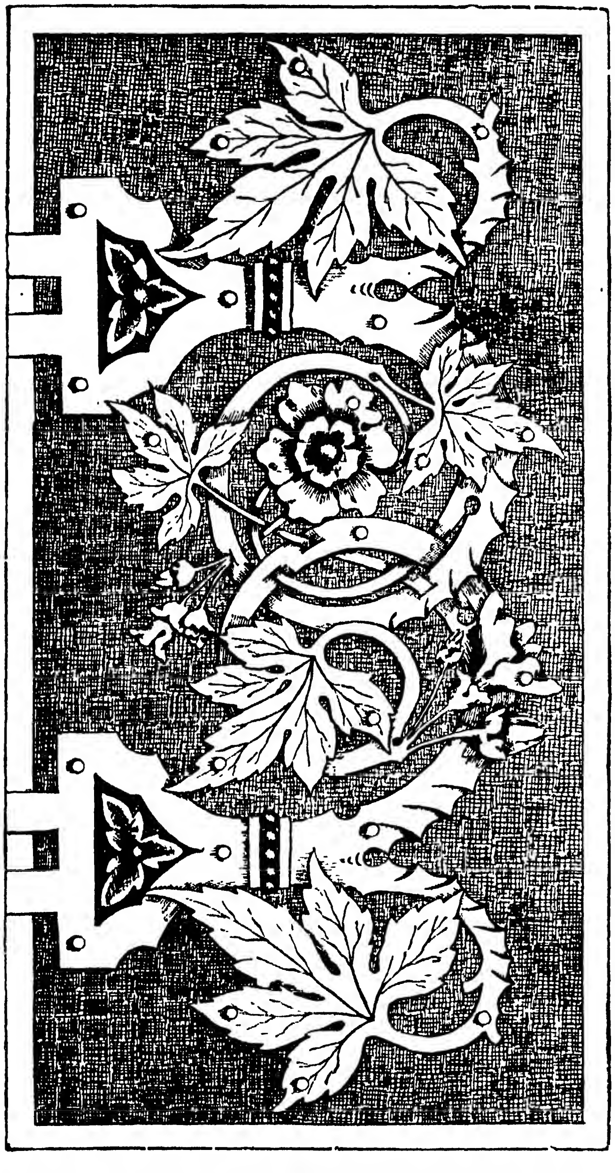


DESIGN 220.—SAW-PIERCING. CASKET HINGE WITH TWO 1-INCH BRASS BUTTS.



DESIGN 221.—SAW-PIERCING. HINGE OF FRET-CUT METAL.

ends) the newly designed hinge, and which corresponds to the half that is thrown away. If the amateur has any mechanical aptitude he may readily and neatly do this; if not, it should be intrusted to a skilled worker in metal.



Design 222.—Etching on Metal. Brass Hinges for Cabinet Doors.

ETCHING ON METAL.

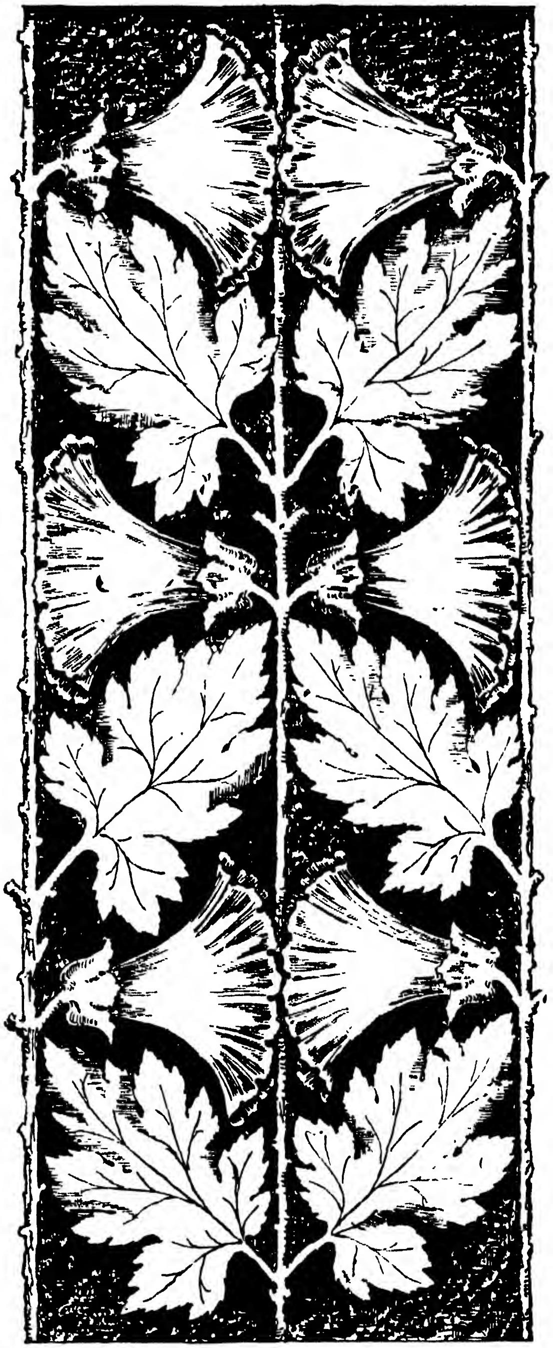
The principle of etching metal by acid for decorative purposes is the same as for artistic etchings (fully treated under Drawing). The chief difference is that in artistic etching the drawing is made on the metal for the purpose of printing impressions from it; in decorative etching the drawing or design eaten into the metal is made for its own sake, being the final and, indeed, the only object sought. To prepare the plate for etching cover the face with a thin coating of wax, which can be readily spread by heating the plate on the top of a kitchen stove, and pouring the melted wax on it from an iron ladle, holding the ladle with the right hand, while the plate is held, by means of a pair of nippers, with the left, turning the plate so as to spread the wax evenly and allowing all the surplus to run off.

The best etching ground is obtained by boiling refined wax four to six hours, which removes the "stickiness" and makes it yield readily to the needle-point in outlining, or to the lead pencil, which is the best implement to use when portions of the background are to be cleared for the action of the acid. When the wax is sufficiently boiled, remove impurities by straining it through a stretcher, or sieve, of thin, open muslin. Strain into a shallow tin pan, allowing it to form a cake three-eighths of an inch in thickness. It can be readily taken from the pan when cold and broken into convenient pieces for use.

The design to be etched must be first drawn on paper, when it may be transferred to the waxed plate by means of black or red carbon paper. The plate must, of course, be waxed on face and back. When the design has been transferred to the plate, go over the lines with a dull point, being careful that the lines are traced clear to the metal. When the design has to be eaten completely through, it is desirable to trace just outside of the line, so that the eating away by the acid may not encroach on the design. When the design has been traced on the plate, place it in a porcelain dish, or shallow wooden trough, and pour pure nitric acid over it till it is covered about a quarter of an inch. If the etching is done in cold weather it is advisable to keep the acid near the fire for some time before using it, so that it may not chill the wax and cause it to spring from the plate. The etching should be done in the open air. The fumes from the plate are not only disagreeable, but they would, if confined to a room, rust every metal article exposed to them.

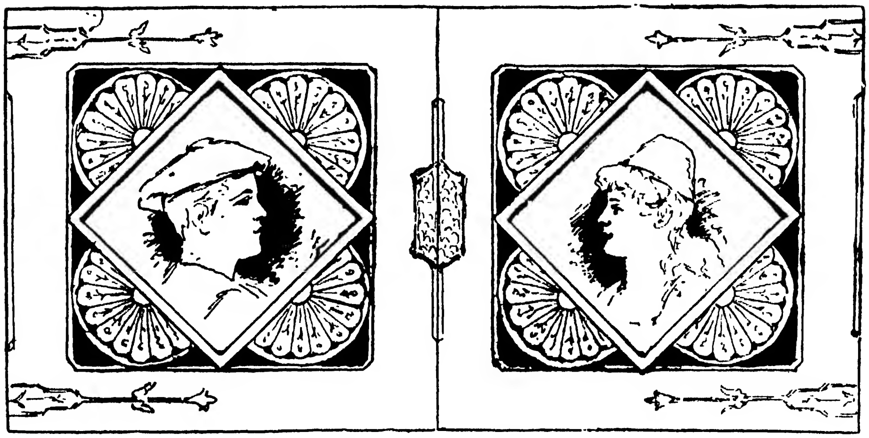
If the design to be etched contains light line surface decoration, five minutes of the bath will probably eat it to a sufficient depth. The plate must then be taken out and tested with a point, to ascertain if the lines are deep enough. If they are not, it must be returned to the bath. When the light surface decoration is sufficiently etched, wash it by pouring lukewarm water over it; then dry with soft newspaper or blotting-paper. Now "stop out" all such lines as are eaten to the required depth, by passing a "heater" over them, which will melt the wax and cause it to fill the etched lines. The heater is made of a piece of iron or copper wire, three-sixteenths of an inch in diameter, brought to a dull point and bent. Placed in a handle and heated and brought into contact with the wax already on the plate, or with a small portion held in the left hand, it can be readily melted and deposited where required.

When the waxing up is completed—care having been taken to repair, by means of the heater, any portions where the wax may have sprung from the plate—return the plate to the bath. From thirty to sixty minutes may be required for the acid to eat completely through a No. 24 or No. 22 plate. If the design is not entirely released by the acid from the background, use a narrow steel chisel to free it. A little filing of the edges may be necessary to bring them to a desirable finish. Holes to secure the hinges, by means of round-headed brass tacks, should not be etched, but drilled.



Design 223.—Etching on Metal. • Panel Hammered and Etched.

When the etching consists of a surface design only, that is, where no portions are to be eaten completely through, it is advisable to use nitric acid diluted with an equal quantity of water.



Design 224.—Doors of a Hanging Cabinet, with Panels of Etched Copper.

HAMMERED METAL.

I. MATERIALS.—ANNEALING.

Repoussé or hammered decoration on thin sheet metal is well within the abilities of the average amateur of either sex. Gold, silver, copper, brass and iron are all, to a certain extent, available.

Gold, in its different alloys, is one of the best metals for the purpose, it being extremely dense, ductile and workable; but from its cost, and the high degree of skill required to produce work of a character in keeping with the value of the material used, it is unnecessary to speak further of it here.

Silver, though expensive, is admirably suited to the demands of the amateur. Sheet silver is as hard and almost as springy as steel, and must be annealed—an explanation of the process will follow presently—in order to remove the hardness induced by the rolling to which it has been subjected.

Iron and soft steel are much used for repoussé work, and, in conjunction with other metals, give beautiful results; but, as both are of so hard a nature and somewhat intractable in a cold state, the beginner, at least, may set them aside as unavailable.

Between copper and brass there is not much choice, and it may be assumed in what follows that the methods referred to will answer in both cases, unless a different treatment for the one or the other should be suggested.

Annealing.—This is done by heating the metal in a clear coal fire until it gets red hot all over, and then placing it in ashes to cool slowly.

The metal must now be carefully flattened. Bend it as flat as possible with the fingers and then rub the unevennesses out with the head of a large smooth hammer, the plate resting on a flat wooden block.

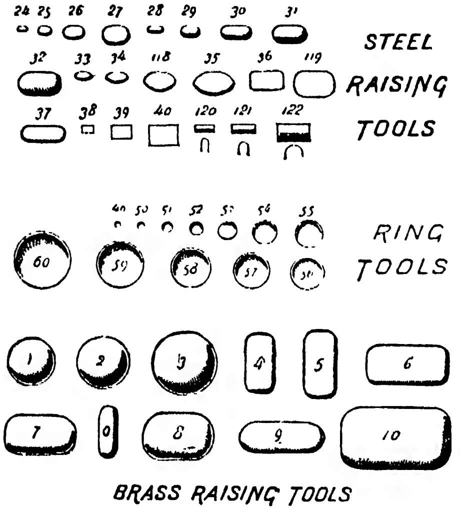
Selection of the Metal.—In choosing brass, bear in mind that the metal of a ruddy tint (when scraped) is generally softer and less liable to crack than that of the ordinary tone. This liability, however, depends largely on the amount of annealing it has undergone. Care should be taken, also, to select sheets free from specks and flaws, these causing disfigurement after the work is completed, not a little vexatious where much effort has been expended on the workmanship.

The most useful thicknesses of brass are from 26 to 22 standard wire gauge, or from 6 to 10 metal gauge. If the repoussé is to be very elaborate, and of considerable relief, the metal must be stout enough to bear, without cracking, the consequent reduction of thickness and occasional annealing. A thinner sheet can be used when the amount of hammering it has to undergo is not excessive.

Copper may, with advantage, being slightly softer, be of a thicker gauge than brass. Should you be unable to obtain metal in flat sheets, ready for use, you will have, of course, to prepare it yourself, as that supplied by dealers in rolls is too rough to be used without preparation. To do so, cut off the piece required from the roll somewhat larger than is necessary, selecting a part free from flaws. Next thoroughly anneal the metal.

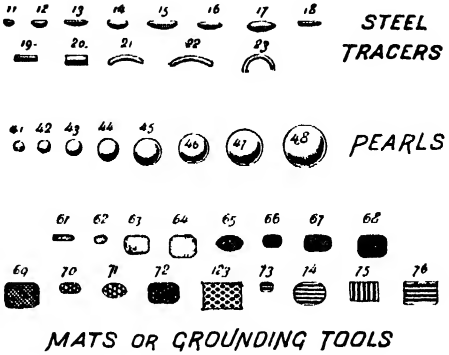
II. TOOLS AND APPLIANCES.

It is important to get the best tools. Try them before buying them, or get the salesman to do so for you. The "temper" of the steel tools should be particularly examined, to see that they are neither so hard as to be liable to break almost at the first blow, nor yet so soft that the edges "turn" after a little use. When steel tools are properly tempered they usually show a gradual change from a deep blue in the centre, through straw colour, to a clear polished steel tint at the point. Tracers and the finer mats and punches demand more careful tempering than other tools. All the tools should be light, convenient to handle, and from 4 to $4\frac{1}{2}$ inches in length.



FIGS. 225-227.

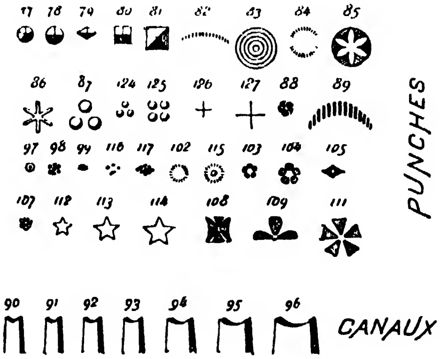
The first requisite is a good steel or steel-faced chaser's hammer mounted on a proper handle. The heads can be bought of various weights and sizes, from $1\frac{3}{4}$ oz. up, but are not generally used for this work above 4 oz.



FIGS. 228-230.

A good size is one of $2\frac{1}{2}$ to 3 oz. The handle or stick must be of lancewood, from 7 to 9 inches in length, and very slender for a distance of about six inches, the end terminating in a knob of a flattened oval form. The illustration will give a good idea of what is meant. The great essentials in the hammer are lightness, strength, and flexibility.

A Rawhide Mallet, handled after the same manner as the hammer, will prove extremely useful both for flattening the metal and for roughly raising large surfaces, to be further worked into form afterward with hammer and tools.



FIGS. 231, 232.

The Tracers with which the outlining and similar processes are to be done are straight and curved, thick and thin, and in length (of cutting edge) from $\frac{1}{32}$ to $\frac{3}{8}$ of an inch, according to the fineness or boldness of the work required. The most useful are those marked from 11 to 23 in the illustration. The one with which the beginner usually learns to trace is numbered 16. It is an invaluable tool. But exercise your own judgment as to the use of tools. Use whichever you find best adapted to secure the desired result. Two or three curved and straight tracers are all that will be required for some time.

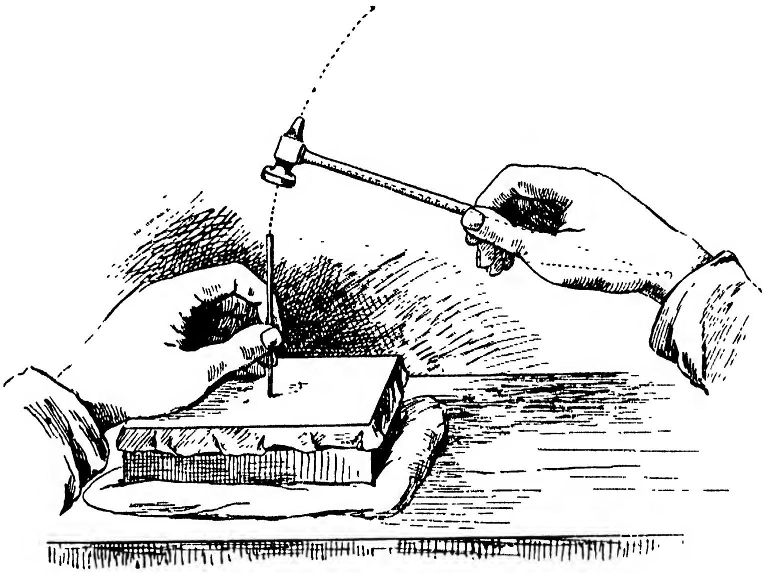


FIG. 233.—THE PROPER POSITION OF THE HANDS FOR REPOUSSÉ METAL WORK.

The illustration shows the sheet metal resting upon the cement block, which itself rests upon a cushion, so as to deaden the sound of the hammering.

Raising Tools.—A few of oval, oblong, and vesica shapes and flat and *bombé* surfaces, the smaller ones of finely finished and tempered steel, and the larger of brass (which being softer will enable the worker to raise the metal without bruising it), and some ring tools, pearls, and mats for producing a variety of grounding and texture, are all that the beginner needs to start with—say a set of those numbered in the illustration 16, 2, 7, 43, 53, 27, 31, 35, 37, 63, and 88, which, of course, could be added to as occasion required.

Appliances indispensable in repoussé work are the cement or pitch block (a bowl is sometimes used for the purpose), to which the metal to be operated upon must be attached, and the cushion upon which the block is to be laid when in use.

The Pitch Block.—Unless the metal has a backing of some kind it will be almost impossible to impart shape to it, and unless this backing is of a proper kind the worker will be limited to the production of ornamentation but little better in appearance than a series of bruises. The only material which will answer all requirements—viz., solidity, elasticity, adhesiveness, and facility of application and removal—will be found to be a compound of soft pitch, resin, tallow, and powdered bath-brick, of about the consistency of shoemakers' wax. This is hard enough to prevent the metal, while it is being worked upon, from turning up at the edges, and yet tenacious enough to hold it until the design is outlined. You can get the cement ready made, either in lumps for melting up, or already made into pitch blocks. If you prefer to prepare it yourself, you will find that the following recipe will answer every purpose: Soft pitch, 7 lb.;

black resin, 4 lb.; tallow, 6 oz.; bath brick, powdered, 6 lb. A commoner mixture for filling bowls or vases is: Pitch, 3½ lb.; resin, 2 lb.; tallow, ½ lb.; white sand heated and then to be stirred in, 9 lb. These are to be melted together over a slow fire in an iron saucepan or pitch kettle. The addition of more or less tallow will make the compound harder or softer according to requirements.

A block about twelve inches square will be quite large enough. When large pieces of work have to be done (though it should be arranged, as far as possible, to do such work in small portions, to be afterward fitted together), they must be worked in parts, the metal being shifted on the block until the whole is completed. A block about 12 in. by 9 in., if 1 in. thick, will require some 8 or 9 lb. of cement.

The Cushion on which the block is to be laid when in use deadens the sound of the blows of the hammer. It should be made of canvas, or other material of close texture, filled with sifted river sand, and should be about 1½ in. thick and rather larger than the block. The cushion should not be quite filled—three-quarters will be sufficient.

The Blow Lamp will be found useful in many ways, especially in attaching the metal to the cement block—as will be explained presently,—and when, in elaborate work, you wish to remove the pitch to see how you are getting on.

A Spatula, or **Smoothing Iron**, will be needed for levelling the cement after the work has been removed from the block.

The Work-table should be so substantial that it will neither shake nor vibrate at every stroke of the hammer; it should have no drawers, as they greatly increase the noise.

The Chair or **Stool** should be of such a height that the work, when attached to the cement block and placed in position on the sand-bag, will be level with the middle of your chest. You should always sit at your work. The position chosen should be directly facing a window, or with the right shoulder slightly turned toward the window.

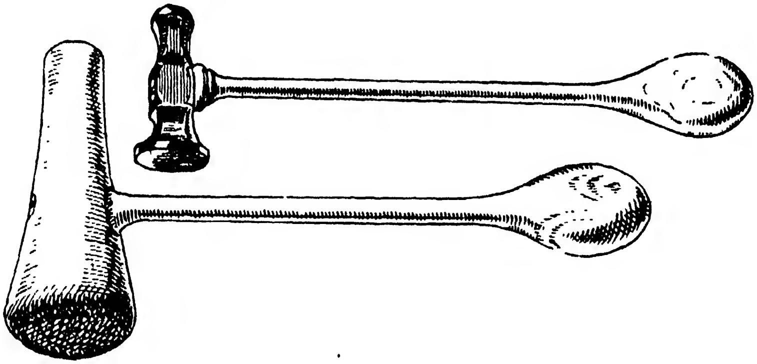


Fig. 234.—The Hammer and Mallet used for Repoussé Metal Work.

III. PREPARATIONS FOR WORK.

Cut off a piece of metal, flatten and anneal it as directed (page 372). Scour it thoroughly with coarse (F) emery cloth and oil (colza or lubricating); then with a finer (O) cloth rub the metal in a circular direction until there appears a fine graining all over the surface, after which wipe off the oil and grit with a rag on which a little turpentine has been poured. The metal is now ready.

To Attach to the Cement Block.—Light the blow lamp, the cotton of which must have been previously soaked with methylated spirit, and gently warm the surface of the cement by blowing the flame upon it, taking care to avoid burning it; this will cause the surface to become level, should there be any slight unevenness. If the cement block be very uneven, the cement should be thoroughly softened (not melted) and the block then laid, cemented side downward, on a flat stone that has been damped, and left there with a weight upon it for half an hour or so.

Next, the metal must be made hot, rather more so than can be comfortably held in the hand, and then, while both it and the cement are warm, laid, papered side uppermost, on the cement. Press the metal firmly all over with a cloth, to avoid burning the fingers, until every part of it is in close contact with the cement. Metal and cement must now be allowed to cool for a while, so as to permit of the transferring of the design.

IV. TRANSFERRING THE DESIGN.

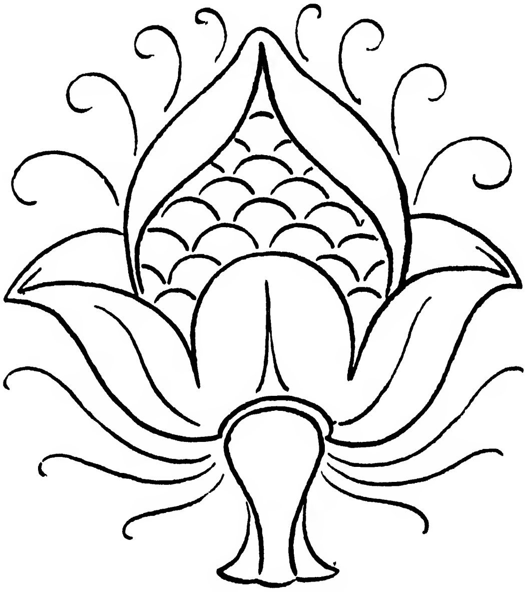
Place (the black side of) a piece of carbon paper on the metal, and over this lay the design, face upward. With a bone point (or knitting needle), press firmly over the lines in the pattern, taking care that the latter does not shift. Remove the paper, and the pattern should appear in black on the metal. With the etching point scratch in all the lines, and add any that may by accident have been missed. Wash out the transfer marks with a little turpentine.

If you are handy with pen or pencil you may sketch directly upon the metal, and then point in with the etcher. Turpentine smeared over the brass or copper will cause the pencil to take more readily. For ink, the surface must be scoured with a little fine sand, to remove any trace of grease or finger marks.

V. THE FIRST ATTEMPT.

Take the hammer in the right hand and the tracer (preferably the one marked No. 16) in the left, holding it with the thumb and forefinger, about an inch and a half above the cutting edge, the instrument pressing against the second finger, which should be about half an inch below the first, the tips of the third and fourth fingers at the same time resting upon the metal, and all touching each other. The right position of hands and tools when tracing are clearly shown in the illustration.

The Tracing or **Outlining**.—Place the point of the tracer (which should rest against the second finger) on some portion of the outline in the left top corner of the work, slightly tilting the tool backward over the other fingers, so that the front point is just lifted off the metal. Now strike the tool fairly on the top with the hammer, and forcibly enough to strongly indent the brass or copper, and continue to do this with about the same degree of rapidity with which a clock ticks, and if the tool is properly held and the blows of the hammer are given from the centre of its face, the tracer will move forward toward the right, cutting a line as it goes. Hold the tool with only just sufficient grip to keep it from slipping out of the hand, altering its angle, or running off the line, and make the lines by a continuous forward movement—not by punching the tool in, then shifting it and striking again, and so on. You will, at first, find this more difficult than it may appear. Probably you will give feeble and uneven blows, first on one side of the tool and then on the other, sometimes



Design 225.—Exercise in "Tracing" or "Outlining in Repoussé Metal Work.

missing it and striking your fingers instead; then a fair and central blow; next a blow with the edge of the hammer head; again, a blow with the hammer turned on its side, or even upside down. This describes pretty accurately the first attempt of nearly every beginner. But do not be discouraged. With patience and perseverance you will soon get the required facility.

Trace all the lines in the pattern that run from the left top corner to the right lower corner, and all curves that have their concave side toward the worker, starting always at the top, and then turn the block round so as to bring a fresh series of lines and curves into the position occupied by those just done.

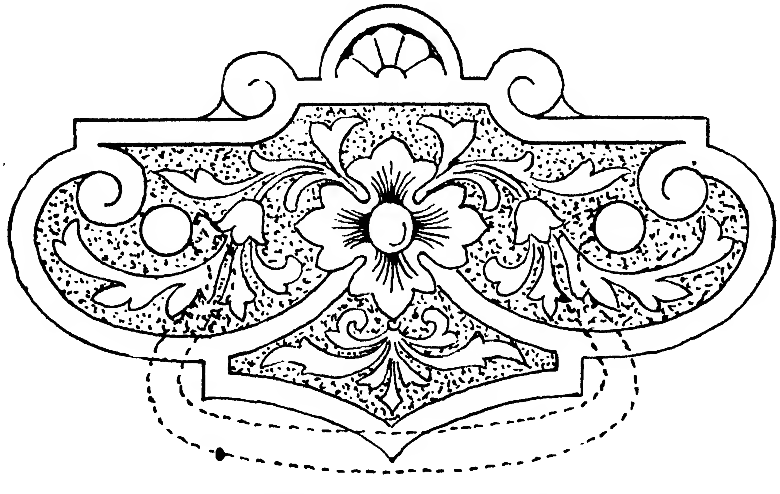
When curves of small diameter have to be traced, it will be found necessary to tilt the tool more on to its cutting point, and to strike more rapidly than when tracing larger curves, but without allowing the tool to travel any faster. Indeed, it should rather be held back than otherwise.

VI. FLAT CHASING.

With a tool like one of those marked 42, 50, 88, and 98, holding it in the same manner as directed for the tracer, except that it must be held more perpendicularly, punch the background of the design all over until the pattern only remains with a plain surface. The force of the blow from the hammer must always be of the same strength, or the ground will be sunk more deeply in one part than another; besides varying prominence will be given to the tool marks, a defect that will stamp the work as amateurish at once. The tool marks of tools 42, 50, and 98 should be quite close together; those of 88 and similar ones slightly separated. Occasionally the pattern may be tooled over in parts with tools 61 to 72, but do not attempt this until you have made considerable progress in the management of the tools generally.

Much that is beautiful and really artistic can be done in this flat or surface chasing; and of course all objects, such as trays, table tops, etc., in which it is absolutely necessary to retain a flat and smooth surface, must be thus treated. Most of the Benares and other Indian work so much admired is executed in flat chasing.

To obtain good effects in flat chasing, the matted and plain portions should be about equally balanced. It will, however, be rather better to err on the side of too little matting than on that of too much; for when the matting is overdone the design always appears attenuated and amateurish. Pattern punches may be used in this particular branch of repoussé work with much effect, if not employed so lavishly as to give the idea that the whole of



Design 226.—Drawer Handle Plate in Repoussé Brass.

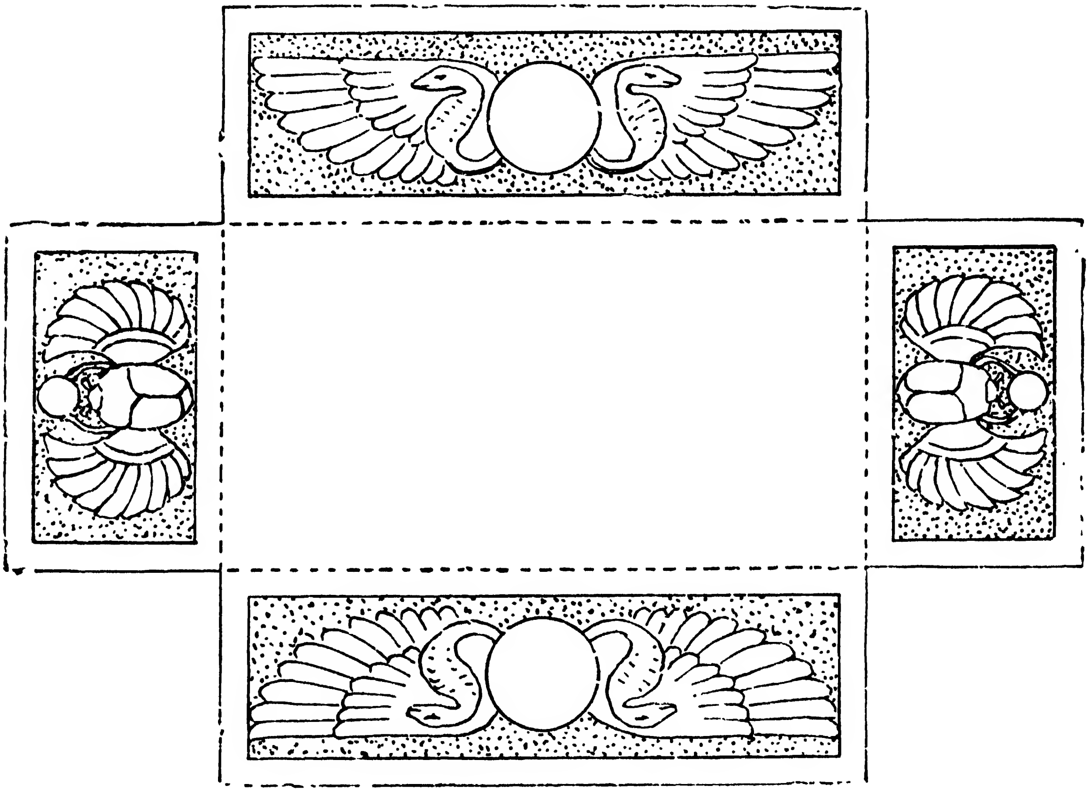
the pattern has been produced by such means. For this purpose tools 86, 87, 88, 97, 103, 105, 108, 109, 111, 112, 115, and 126 are very suitable.

VII. RAISING AND MODELLING.

Having acquired facility in flat chasing, you may now attempt to give relief to a pattern you have already traced. The first step is to remove the metal from the cement block. To effect this it is sufficient, usually, to drive a broad, flat chisel between the metal and the cement until they are forced apart. Should the cement prove too tenacious, heat the metal by means of the blow lamp and remove it while hot with a pair of pliers. Now flatten the cement on the block, as previously directed, and, while it is cooling, clean off all the cement adhering to the metal with a rag soaked in turpentine, slightly warming the plate again and again if the cement is very refractory, of course keeping the rag out of the way while using the lamp.

To protect your work if it has to be left for a time, turn the brass face downward upon the table, laying a piece of paper beneath it, and place a weight on the block.

When the metal and the cement blocks are quite flat, warm both slightly, and put the former, with its outlined side underneath, on the cement, pressing it all over until every part is attached in the same manner as when it was being prepared for tracing. If the work is large, start at once, without waiting for the cooling of the cement, to raise those portions that are to stand up in relief, by hammering them into the cement by means of the largest

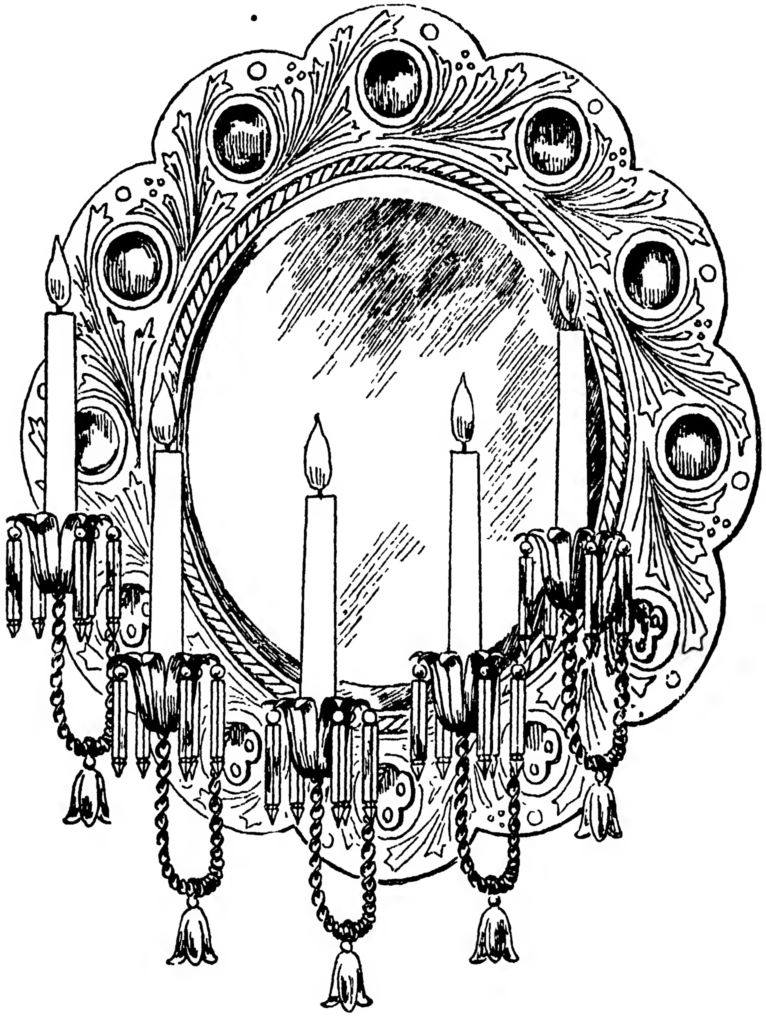


Design 227.—Match-box Holder, in Repoussé Brass.

The sides are to be turned up at the dotted lines, and joined.

raising tools that can be conveniently used; commencing at the points to be in greatest relief, and working outward toward the edges, holding each tool much in the same manner as when tracing, but more perpendicularly, and slipping it slowly along by means of the second finger without lifting the tool off the metal.

The sinking (which is of course really the raising when finished) should not be attempted all at once, but by stages, giving a slight depth all over the pattern first, and then going over it again and still further deepening it where required, until the whole looks like a mould of the work it is desired to produce. In raising, as in all the rest of the work, proceed slowly, endeavouring to foresee the effect the hollows will produce when seen as raised lumps on the front side, so that no very serious mistakes may be made which would be difficult afterward to correct. To sink a given space, even a simple hollow, smoothly



DESIGN 228.—BRASS SCONCE, WITH CUT-GLASS PENDANTS.

The pendants utilised in this sconce were relics of a disused "crystal" chandelier, such as are not infrequently found in the lumber room or attic.

and entirely without bruises, will require much practice; so that for some time all complicated modellings should be avoided, and only simple forms attempted.

It is a good plan to mould the most difficult portions in wax, and then to copy the modelling, bearing in mind that the highest points in the model should be those that are to be sunk deepest on the side now being worked, and that those of less relief should be proportionately less in depth.

As the work has once more to be turned over and again worked on its front side, it is not necessary to add every detail at this stage; all that need be aimed at is a generally correct shaping in mass. Still, it should be noted that an inexperienced hand can do very little on the front side to raise any parts that have been allowed to remain below their proper level; so that the work should be carefully examined in detail, in order that such portions may be put in before the plate is removed from the block previous to turning it over, or it will have to be attached again.

For raising large, smooth surfaces, as a plum, for instance, the brass tool No. 7 is the best, and for smaller surfaces, according as they are to be flat or *bombé*, Nos. 4, 35, 27, 37, 3, 31, 34 are most likely to be useful.

When very large portions—as large, say, as three inches across either way—have to be raised, it is best, after the outlining has been done, and before attaching the metal to the block, to lay it face downward on the sand-bag, and then to beat it with the mallet roughly into shape, afterward fixing it to the block and completing the process, as before explained.

When leaves or other similar objects rise suddenly from the background, a strong line must be traced, after the raising has been effected, just inside the raised line caused by the front outlining. This should be done with a thick or blunt tool, such as Nos. 14, 15, or 17, and then softened into the general body of the relief with tool No. 37. The centre veins of leaves may frequently be done in this way, but when so done they must not be worked on the front.

To obtain good effects in repoussé, it is not at all necessary, as is sometimes supposed, to resort to high relief. It is more difficult to model correctly and to maintain the due proportion between the several parts in low than in high relief. Sometimes, on removing the metal from the block when the raising has been completed, the amount of relief appears much less than it was thought to be when seen from the back; but this, unless the design demands high relief, need not cause disappointment, provided only all is in due proportion; for in the finishing the height may be much enhanced and all the desired effect secured.

VIII. FINISHING.

Having completed the raising and modelling, carefully scrutinise every part of the work to see that no mistakes have been overlooked. The metal may now be again removed from the block and thoroughly cleaned as before. Next, fill up the hollows in the cement block by pressing the spatula (which should have been previously made nearly red-hot) into the cement. This, as it pushes the melted cement before it into the holes, fills them quite up. While this is cooling, break up a few pieces of cement and put them in the hollows at the back of the plate just removed, hold the plate with a pair of pliers over the lighted blow lamp and so melt the pieces, until they flow and fill up the sunk portions. When every hollow is filled and the surface is quite level, allow the whole work to cool. When it is quite set, warm the surface of the cement on the plate and on the cement block, just sufficiently to make them adhere when the two surfaces are pressed together in close contact. When the cement is quite cold start the finishing or correction of the modelling from the front side.

Take a thick blunt tracer, such as No. 15 or 16, and with it (wherever the background has been raised out of the level by the beating up of the design) go round the outline of the raised parts, hammering the tool with just force enough to carry it down to its original level. At the same time try to force the metal at the edge of the relief portions underneath by holding the tool at such an angle that its top shall be well outside the work. This will tend to sharpen up the outline and give the pattern the effect of the undercutting so often seen in carvings. Care must, of course, be exercised to prevent the tool piercing the metal, which would cause a crack or hole that an amateur would find it very difficult to repair. This undercutting process is extremely useful in the treatment of foliage designs, as it offers the best method for bringing the edge of a leaf clear off the background without giving it a thick and clumsy look. When the outline has been forced back to its original position, care having been exercised to prevent its being driven below the general plane, the marks left by the tracer may be smoothed away with such tools as No. 56 or 37. Should the relief obtained appear to be of too flat a character, by commencing this operation at a little distance from the relief and working the tool toward it, something may be done to bring the pattern up more prominently, especially if the blows from the hammer are given in such a way as to draw the tool along while striking it.

Now, correct the modelling of the raised parts, smoothing out the bruises or marks that the raising tools may have left, and softening away all hardness, making the different forms blend imperceptibly into each other, so that the exact point at which a hollow begins to swell into a protuberance may not be too clearly apparent. Tools Nos. 26, 27, 34, 118 and 37 will most easily effect the purpose when concave surfaces have to be dealt with, and 36, 119, and 37 in the case of convex ones.

Of course, the whole of this process must be lightly done, and in such a way that the relief is not flattened down again.

IX. THE BACKGROUND.

The background must receive very careful consideration not only as to design, which must be well *contrasted* with the raised portions, but as regards the execution as well. It is easy to spoil a good piece of work on which great pains have been expended, by carelessness in regard to the background. Any unevenness in the grounding will at once be detected by the eye.

The tool must be held upright and shifted with the fingers at each stroke until the whole ground is evenly covered, care being taken to strike with the same force at each blow, so that no part may be more deeply punched than another. The mark of the general tool should not be recognisable; each impression of it should overlap the one made previously. The small pearl or *pointilloir* (No. 98) will be found very useful for ordinary purposes. When the tool, however, is of a distinct pattern, such as Nos. 86, 108, 109, 111, or 112, one impression should not infringe on the next. There should be just sufficient space left around each to enable one to identify the pattern. Yet when viewed from a little distance each mark should be lost in an evenly-distributed mass.

X. TEXTURES.

Large and bold work may be considered finished at the stage we have now reached, but any object that is likely to be handled or examined in detail may receive further treatment. This will consist of giving certain textures to the raised forms or to parts of them, by means of the mat or grounding tools. Try to produce even tracks of frosting, just the width of the grounding tool, but free from spottiness or single tool marks. In the case of leaves and fruit somewhat naturalistically treated, the texture should be applied more particularly to the hollows or parts turned away from the light; the high lights may remain quite smooth.

In representing the human form, flesh and skin may be tooled over with a blunt tracer, small oval raising tool, or a nearly worn out mat, like No. 72, but much care and skill will be required to avoid a seamy appearance.

For leaves, experiment with Nos. 62, 66, and 70 mats, with tracer No. 16, or raising tools 25 to 33. For fruits with melon or pomegranate-like skins use a well-worn No. 72 mat, or raising tool No. 24. Cherries, grapes, etc., may be tooled with a blunt tracer on the parts turned away from the light; but as they are somewhat difficult to do neatly, perhaps they had best be left plain. The skins of snakes, scaly reptiles, and fish are best rendered with different grades of a half-round tracer like No. 23; but they must be punched on the underside of the work immediately after the raising has been completed, and before the metal is turned over for working on the front side. For conventional animals with scales, such as dragons, a good effect may be got by using an oval ring, punching it contiguously, and with its greater diameter parallel to the sides of the part under treatment. It is difficult, however, to find the oval tools for sale at any tool shop.

Many rough-surfaced skins, both animal and vegetable, may be effectively treated by punching, immediately after the raising has been completed and before removal from the block, the whole with a small pearl or raising tool (Nos. 42 to 48) so closely that no particle of plain surface is left.

You will make many discoveries for yourself, and if you are wise you will add greatly to your stock of knowledge by studying good specimens of silver, copper, and brass repoussé in the museums and wherever else you can find them.

XI. RAISING FROM THE BACK.

The instructions we have so far given cover the work that an amateur is likely to undertake. Sometimes, however, there may be necessary variations of the mode of procedure prescribed: as, for instance, in the case of a bowl or vase, where the outside can be operated upon with ordinary tools. In such a case there are two methods for obtaining the desired result. For the amateur the following will be the easier.

The vessel must be filled with cement (see p. 374), laid upon a sand-bag, and the design outlined upon it; after which the ground surrounding the pattern must be sunk by rather heavily matting it with a suitable punch, beginning at the centre of each space and working therefrom toward the design it is desired to raise. At each blow the metal will expand. The blows being directed toward the centre and consequently contracting the circle occupied by the parts worked upon, the metal over and above that which the reduced circle will contain is forced into those parts untouched by the tool, thereby bringing them into greater relief and so attaining the object desired without once touching the metal from the back. This process can be applied also to flat panels when no great relief is needed, but it will be found more difficult for those than for bowls or vases; for, as there is nothing to prevent the whole plate expanding, a good deal of practice is necessary to find out the knack of making it do so only at the point where the extra surface gained by the expansion will be absorbed by the parts to be in relief, instead of being lost in a general increase of the size of the plate. The relief thus gained, both in the case of the bowl and in that of the panel, must then be carefully chased and modelled in proper shape in the same way as explained for correcting the raising in ordinary repoussé.

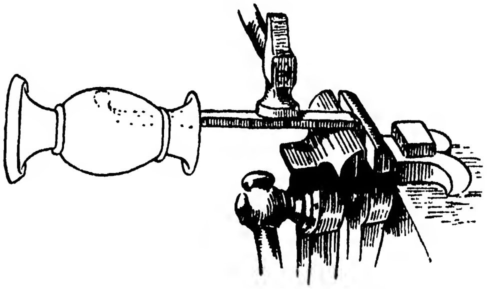


FIG. 235.—USE OF THE SNARLING IRON IN REPOUSSÉ WORK.

The second method requires the use of a tool called a snarling iron, which is merely a stout bar of iron having an inch or two of its length turned down at right angles at one end and a round knob at the other. The turned-down end is placed in the jaws of a strong vice, and the vase, with the design drawn upon it, is passed over the knob and held firmly in such a position that the knob inside the vase is exactly under the part to be raised. Then a second worker with a heavy hammer strikes the snarling iron smartly near the vice. The force of the blow will travel along the iron and be communicated thus to the underside of the pattern on the vase, and thus, by repeated blows and a skilful shifting of the vase as the pattern demands, a rough relief will be obtained, which, like that gained by the other method, must be properly chased up. The use of the snarling iron is best explained by the illustration.

In conclusion, we would advise the amateur who may experience difficulty in carrying out any of the foregoing instructions to consult the Messrs. Gawthorp (their Art Metal Works are in Long Acre), and if possible take a few lessons from either of them, for they are a family of artificers. A little actual practice with the tools, under expert supervision, is of more value than any instruction that can be acquired from even the best text-book.

XII. LACQUERING.

What varnish is to an oil painting, lacquer should be to metal, *i.e.*, a preservative from the deteriorating influences of the atmosphere. Generally speaking,[1] it may be used for no other purpose. Although made from similar materials (shellac, gums, and spirits) the lacquer used for a finish to brasswork is quite another preparation from the Japanese or Chinese lacquer with which trays and similar wooden objects are covered. Mr. Gawthorp gives us the following directions for lacquering brass :—

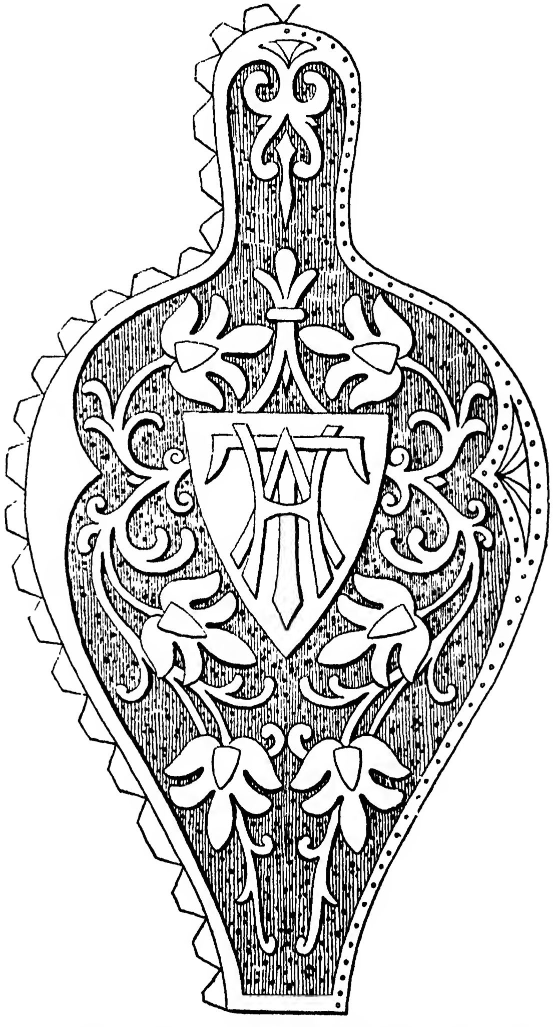


Fig. 236. Repoussé Bellows Mount, ready for Finishing.

In cutting out the sheet metal for the mount, there must be margin to allow for the thickness of the wood of the bellows lift (see scolloped lines above). Wedge-like forms are cut out around the edge. It will be observed that the greater the curve, the closer these wedges come together. Holes having been drilled or pricked in them, they are turned to the proper angle by means of a pair of wide-nosed pliers.

“ Having obtained some French gold, which must be kept carefully corked when not in use, as the spirit in it quickly evaporates, pour out just enough of it into a china vessel to cover the hairs of the brush used. The brush should be a good flat one, of the shape used to damp letter-copying books, and just such a jar as is used with it for that purpose would suffice, although a flat, open one, not more than an inch deep, would be better. To hold the latter, a little wooden stand should be made, so that one end of the vessel shall rest on the table, the other being elevated about half an inch. Across the opening a wire must be stretched, upon which the brush should be wiped after each dip, to avoid drips. Now warm the object to be lacquered to a heat that can just be borne by the hand ; and while it is hot carefully pass the brush, first dipped in lacquer

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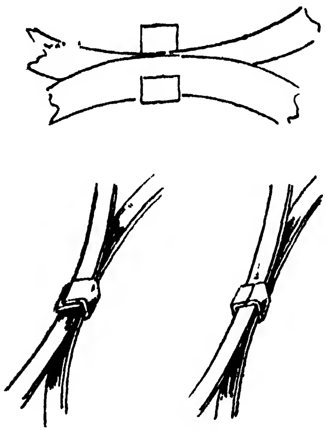
[1] This qualification is necessary in view of the fact that Mr. John W. Van Oost, who is connected with *The Art Amateur*, of New York, has, by certain secret processes, produced on metal—especially on brass—some wonderfully decorative effects in lacquer, which are valuable on their own account.

BENT AND LIGHT WROUGHT-IRON WORK.

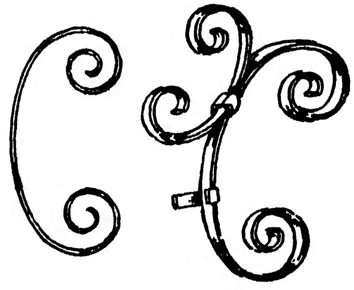
PROBABLY there is nothing in artistic metal work for the amateur which offers a more easy and attractive field than bent-iron. The outlay for tools and materials need be but trifling. Besides a vice and a small block of iron, which will serve as an anvil, you should have a pair of metal-worker's shears, two pairs of pliers—one "round-nosed," one "long-nosed"—a table vice, to fix on the edge of the working-table, a bottle of black varnish and brush, a tape measure, some narrow strips of sheet iron and wire for binding it. The wire used by florists for *boutonnières* will do for most purposes.



FIGS. 237-239.—METHOD OF BINDING THE BENT-IRON STRIPS.

The light strip iron may be had $\frac{3}{16}$ in., $\frac{1}{4}$ in., or $\frac{3}{8}$ in. wide, and about $\frac{1}{32}$ in. thick. Strips about 12 in. long and not more than $\frac{1}{4}$ in. wide are the most generally useful. Even the lightest strips are very strong, and are best to use for suspended objects. For standing objects, where rigidity is necessary, the thicker kind is used, and sometimes a rod of iron is twisted up with it to support it properly. The metal should be neither very flexible nor very stiff; it should bend easily and uniformly, and, once bent, should retain its shape.

The round-nosed pliers are used for bending; the long-nosed sort for clinching the small strips which hold the curves together. The small vice is needed for bending stronger strips at right-angles, one end of the strip being screwed between the jaws of the vice, so that the other end may be hammered into shape. It is also useful in making spirals. The tape measure is used for determining the lengths of symmetrical waves, and the shears, of course, for cutting the strips to measure.



FIGS. 240, 241.—CURVES IN BENT-IRON WORK.

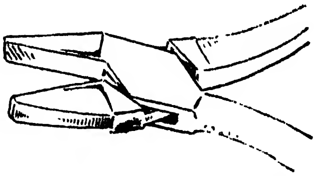


FIG. 242.—LONG-NOSED PLIERS.

In bending, take the strip of iron in the left hand, the round-nosed pliers in the right, and bend slightly the extreme end of the strip. It is important to gain a true curve at the very beginning. The pliers should slip slowly along, bending the iron evenly at all points. If an angle is unluckily made, it can be reduced by using the long-nosed pliers. When two curves are finished, they are connected by means of a small binding piece, as is shown in fig. 129. The strips may be fastened so that one end laps over the other, which makes the stronger joint, or end to end, which has the neater appearance. The curves may be temporarily fastened to a frame by wire to get them properly arranged before binding. When the articles are finished, two coats of black varnish should be applied to prevent rusting. Design No. 230 shows a visiting-card holder intended to be fastened to the front door. The angular frame is to be first made, the corners being bent, as above explained, in the vice. It may be made in two pieces, to be connected by a binding piece, which must also aid to hold the curved strip next it in place. Every curve should be applied to the drawing or to a tracing laid flat upon the table to make sure that it is correct. It will save much time and trouble if when the first curve of a pair is formed the tape be used to take its measure, so that the next piece may be cut of the same length. In many patterns the same curve is

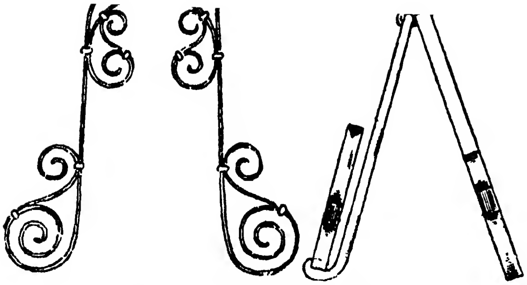


Fig. 243.—Easel for the Menu Stand.

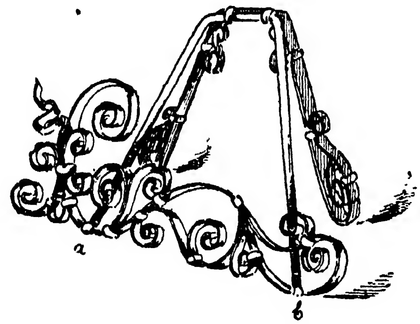
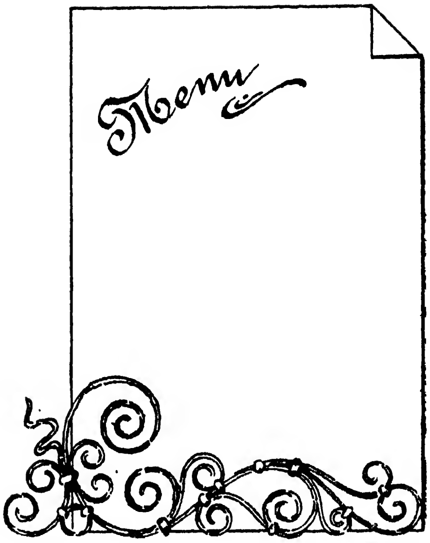
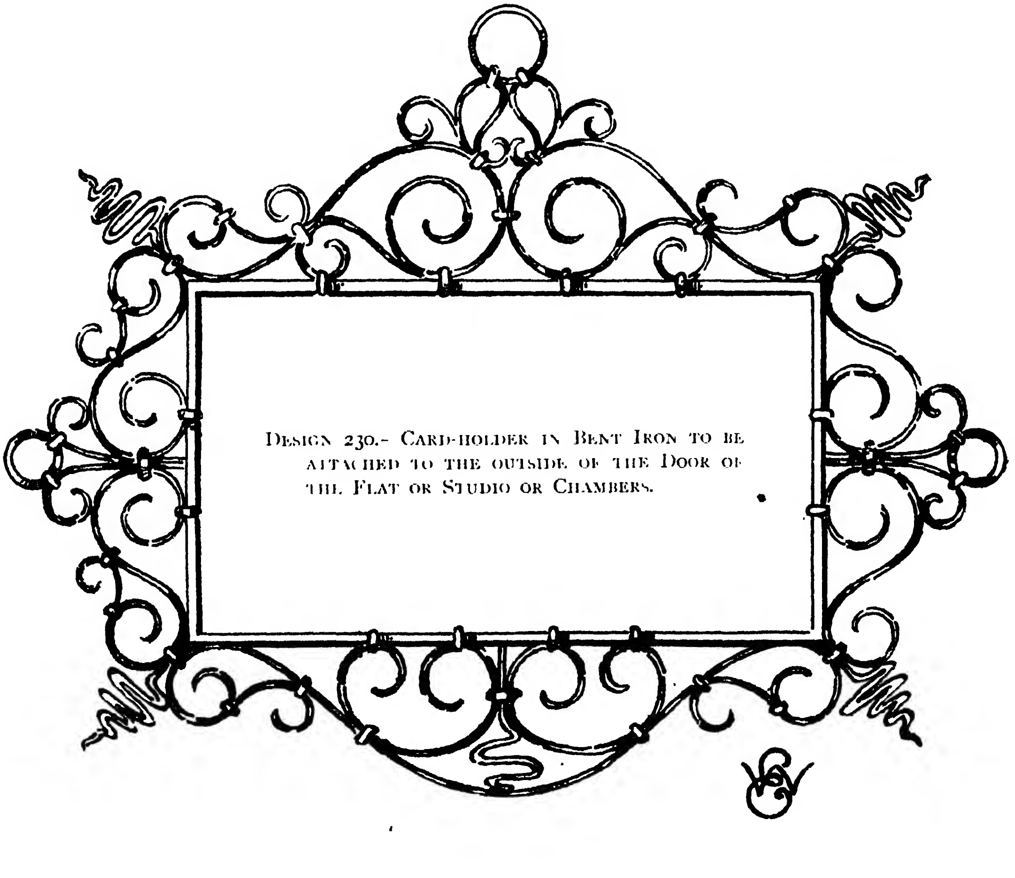


Fig. 244.—Perspective View of Menu Stand.



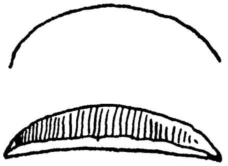
Design 229.—Menu Stand in Bent Iron.



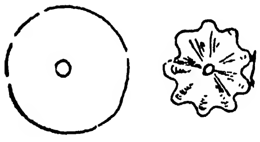
Design 230.—Card-holder in Bent Iron to be attached to the outside of the Door of the Flat or Studio or Chambers.

often repeated, and accuracy and method in this respect are of the first importance; for if the scrolls are not of equal size and all bent true to the drawing, it will be impossible to finish the piece. For this reason the several pieces should be placed together on the table before binding, when any inaccuracy will at once appear, and can either be corrected, or if that be impossible, the erring scroll or scrolls can be replaced by others properly bent. When fastened together and varnished, the piece must be laid aside to dry. A piece of stiff cardboard is to be fastened to the back of the frame, so that the visiting cards can be slipped between it and the frame itself.

The neat little contrivance for holding a watch (design No 232), does not require special comment. The longer horizontal strip may be made slightly concave, the better to support the back of the watch. Fig. 250 shows plainly the hook by which the watch is to be hung.


Figs. 245, 246.

Design No. 229 may be used either as a menu stand or as a photograph frame. It should not give the slightest trouble to the beginner; the drawings explain everything. Each iron strip must be bent most carefully to form the curves, and they are all to be connected at the places shown in the illustration by small binding pieces, as already explained. Having completed the menu stand, prepare the easel for it. To make a slip and rest for the card, take a *round* iron wire and bend it to the shape shown in fig. 244. The ends of this wire should be bent round points *a* and *b* of fig. 244 (see also side view, fig. 243); and the rest should then be formed in such a way as to give enough space for a card to slip between it and the front part. The stand will be finished by connecting the easel with the top of the frame by means of wire.


Figs. 247, 248.

Design No. 233 suggests a treatment for a candlestick. The materials are some sheet iron, an old tin candlestick, and a few pieces of iron wire about one-eighth or three-sixteenths of an inch thick.

First rip the bottom from your old candlestick, and in its place fasten a funnel-shaped form of thin sheet iron with a piece of stout wire projecting down from the bottom of it to fasten the bottom part of the scroll feet to. Bend three sets of scrolls the desired size to form the legs, and bind these to the candlestick with iron wire.

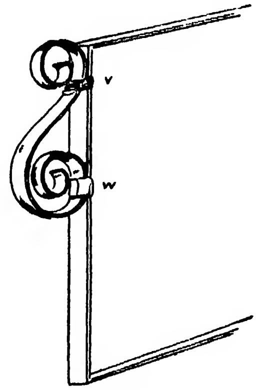


Fig. 249.—Side View of the Card-holder (Design 230).

Design No. 235 affords a suggestion for a collar or cuff box. Six hoops should be made of round iron wire or square iron one-eighth of an inch in size—one from the bottom, one from the top, and four for the cylinder.

The bottom may be of thin wood bound with one of the rings and made fast to the lower edge of the cylinder. The top should be fastened to the upper edge, with one piece of ribbon to act as a hinge; opposite the hinge may be a bow to act as a handle to lift the cover up. The interior of the box should be lined with silk of some bright colour, against which the black iron scrolls will form a pleasing contrast.

Design No. 234 suggests a pretty idea for decorating the upper part of a doorway. Some doorways are so high that to place a curtain pole close under the soffit of the door frame and hang a curtain from it would give it a very long and drawn-out appearance. This undesirable effect can be remedied by placing a pretty wood or metal grille in the upper part of the doorway and fastening the curtain pole directly under it, from which the curtains may be hung.

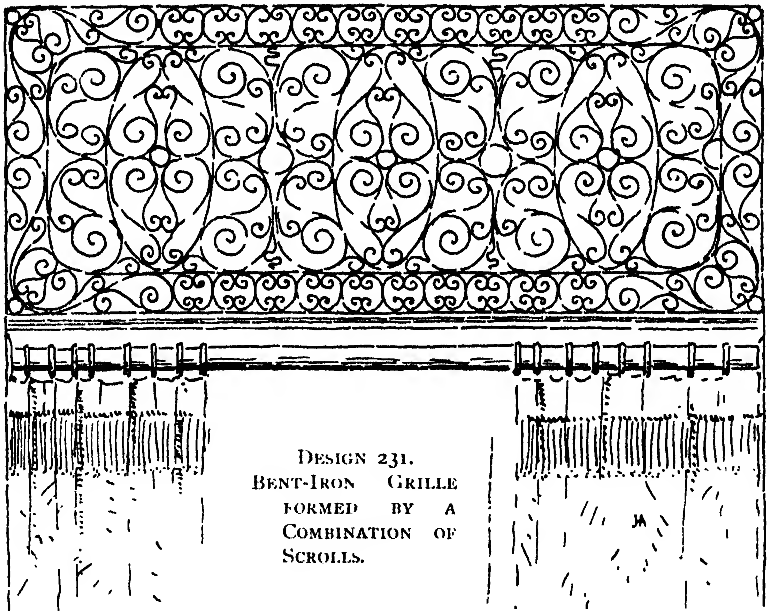
To make a grille similar to the design shown requires a few hours of patient work, and but a small outlay for materials. It is always best to work out on a smooth-top table an object of this character. The full-sized detail should be drawn out on a piece of smooth brown paper, and as this is to lie flat on the table, it is an easy matter to bend each iron scroll to conform with the lines of the drawing.

Design 236 represents a grille for a window or top part of a front door having a plate of clear glass. The outside frame should be of stout iron, perhaps one-sixteenth of an inch thick by one-quarter of an inch wide. Bend this at the corners, so that it will fit inside the style of the door or window in which it is to be placed. Allow it to be one-sixteenth of an inch smaller all around than the style, so as to make room for the bits of iron that will wrap around it, which are necessary to hold the whole in place. It is best to lay the frame down on a smooth-top table over a piece of brown paper free from creases or wrinkles, and mark with a pencil the size of the frame; then sketch in the full-sized design as you would have the finished grille. On this plan you can bend and fit each scroll in place, and when you have worked out the entire design in iron begin to fasten the pieces. When fastening the rings to one another, always clamp the little piece of fastening iron so that it will hold the ends of the hoop and also hide the joint, thus making it appear to be a jointless band of iron.

The iron used in making these scrolls may be bought at the ornamental iron-worker's. It should be cut in strips about one-quarter of an inch wide, and in that shape it can be more easily bent. It is generally best to use an old pair of gloves or fingers of gloves when bending the strips of iron, as otherwise the ragged edges may chafe the skin, especially if the hands are soft or tender.

All articles that are of iron and that are to be black should be painted with a good and lasting coat of lead black.

If your iron-work is to be exposed to the weather, it is best to give it a coat or two of red lead thinned with oil. This is a good waterproof



Design 231.
Bent-Iron Grille formed by a Combination of Scrolls.

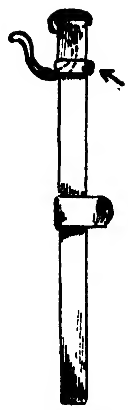
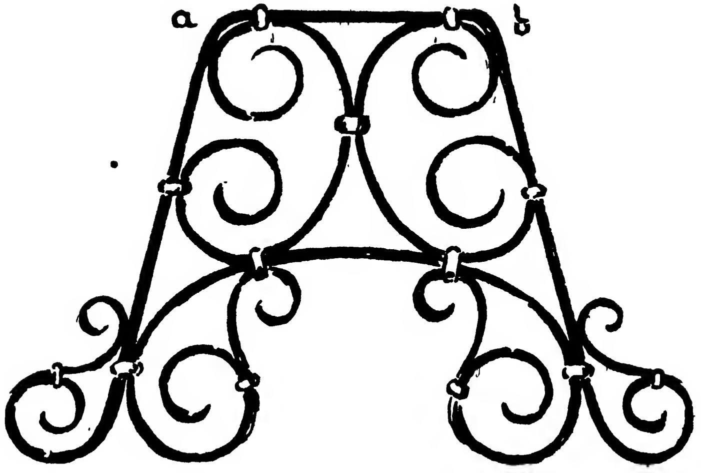
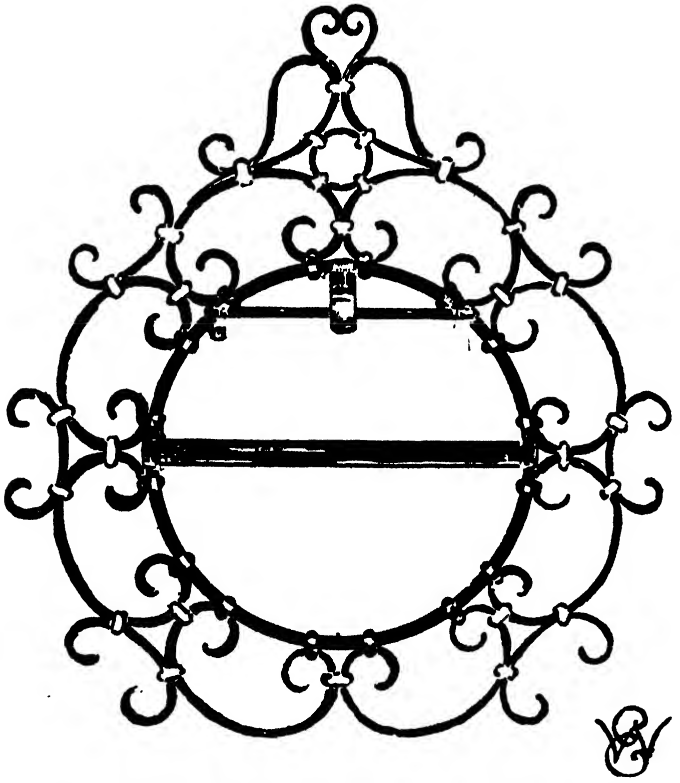
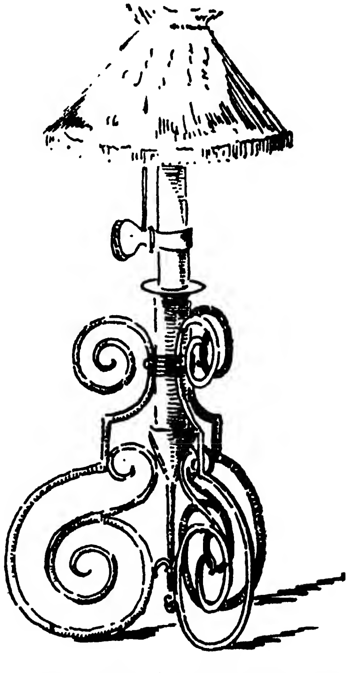


FIG. 250.
HOOK FOR
THE WATCH.



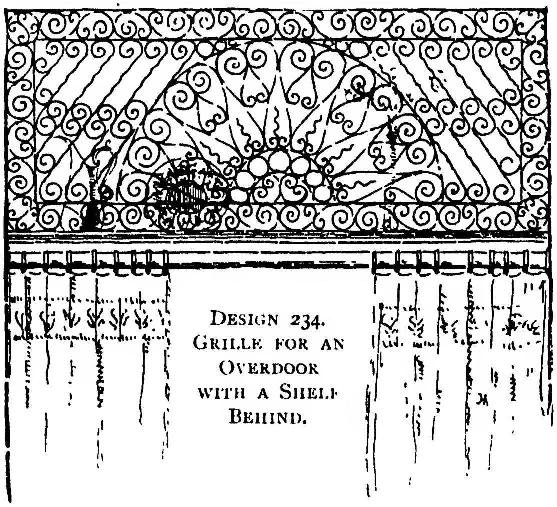


DESIGN 232, 232A.—WATCHSTAND AND BACK IN BENT IRON.

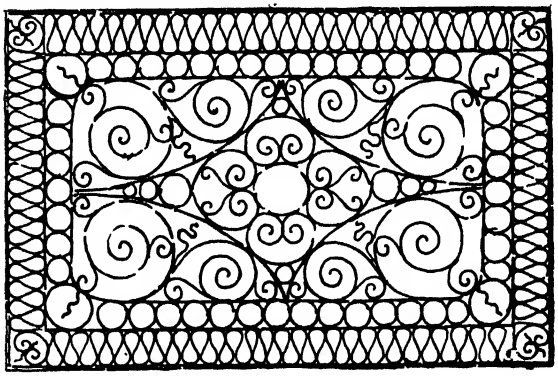


DESIGN 233.—CANDLESTICK MADE OF SHEET IRON AND IRON WIRE.

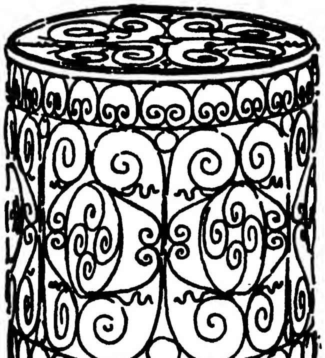
coating for metals that rust or corrode, and over it several coats of black may be placed to advantage to insure your iron against rust.



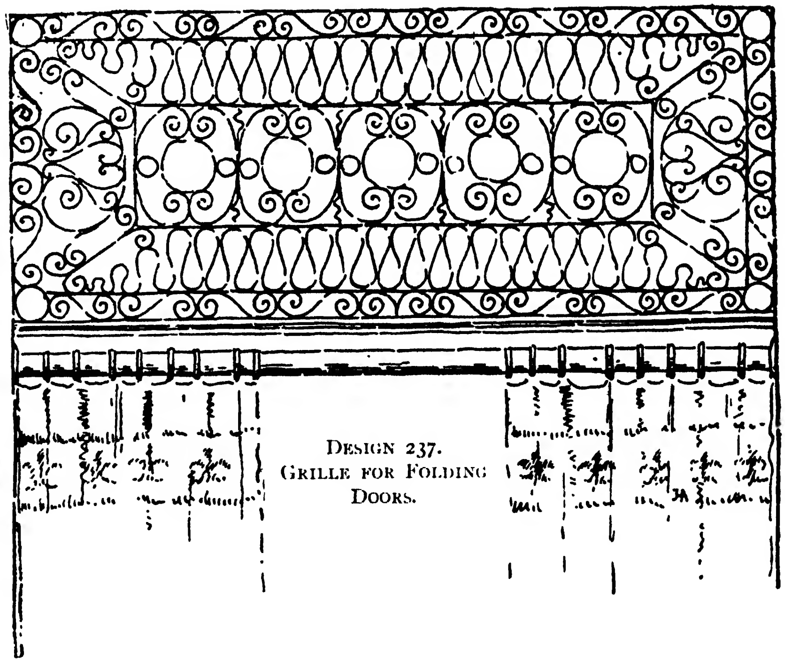
Design 234. Grille for an Overdoor with a Shelf Behind.



Design 236. --Grille for a Street Door.

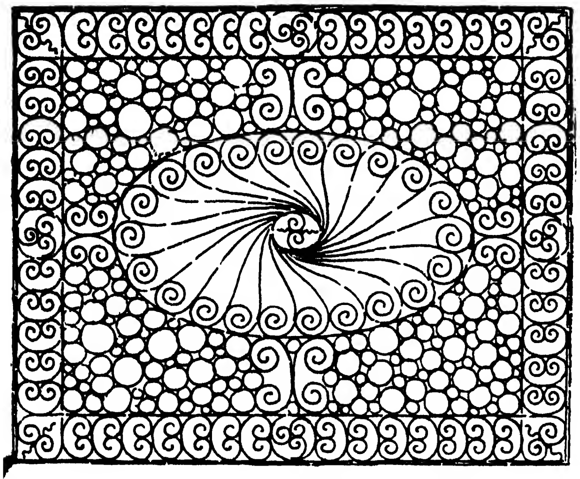


Design 235.—Collar- or Cuff-box of Bent Iron or Iron Wire.

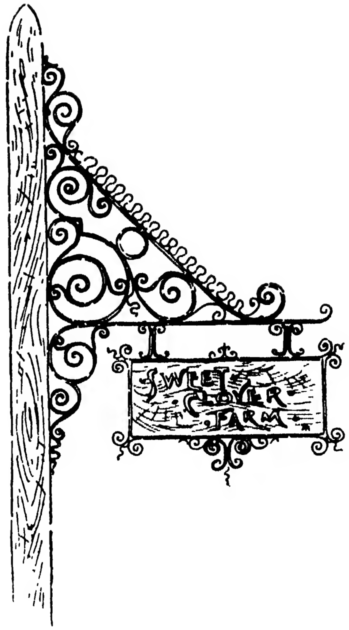


Design 237. Grille for Folding Doors.

Design No. 240, representing a hanging lamp, is perhaps more difficult to make than any object we have yet mentioned. After some experience, however, you need not be afraid to undertake it. Get a small "fairy lamp" of pressed glass, showing bright colours, and prepare the frame work for it as follows: Bend an iron strip to a complete circle, fitting it around the step of the glass at the point



DESIGN 238.—BENT IRON GRILLE.


SWEET
CLOVER
FARM

DESIGN 239.—SIGN BRACKET. FOR COTTAGE OR FARMHOUSE.

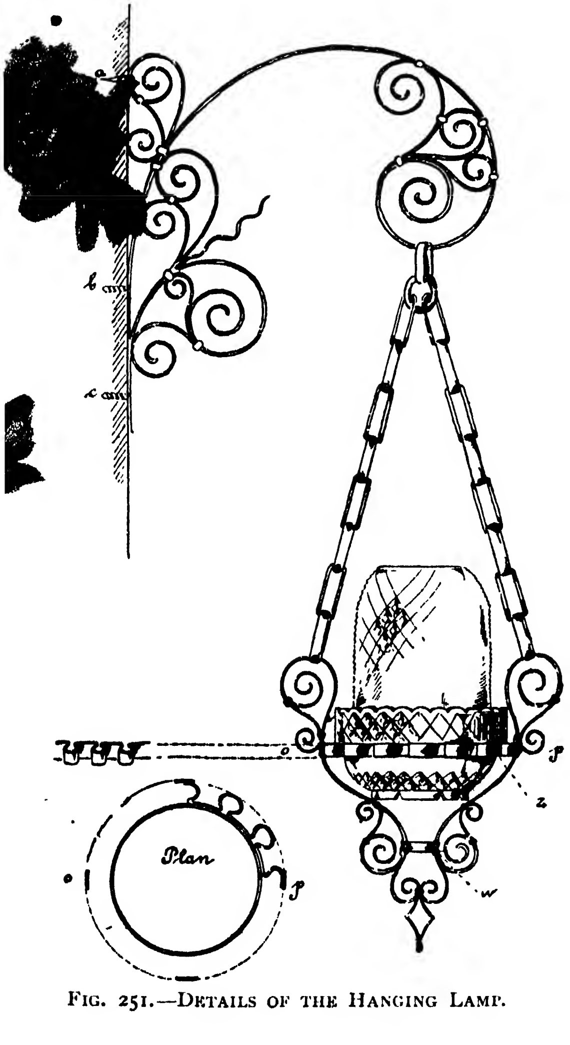

a
b
c
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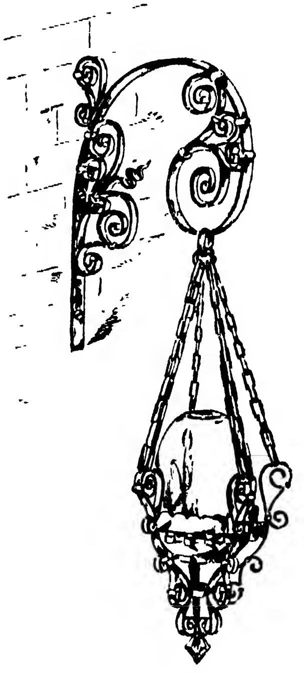
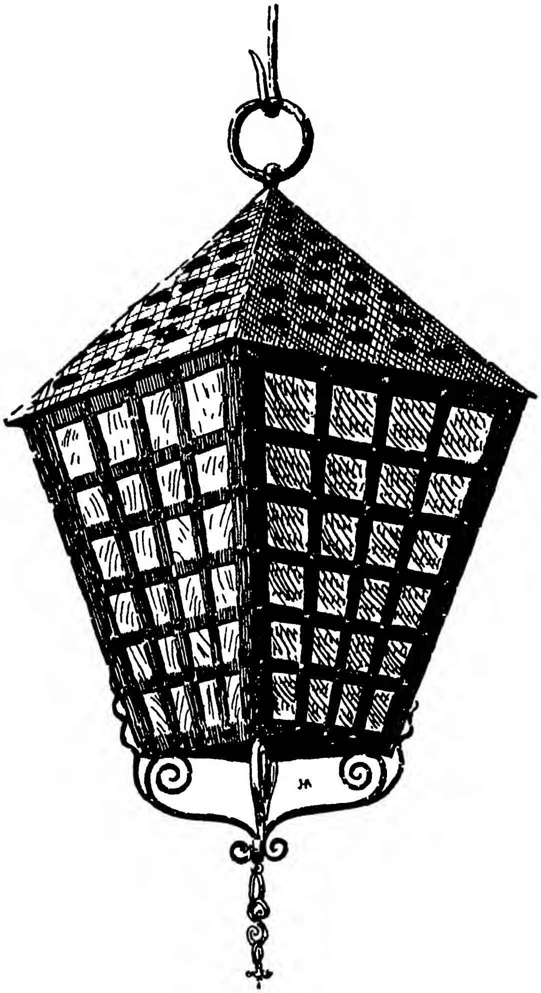
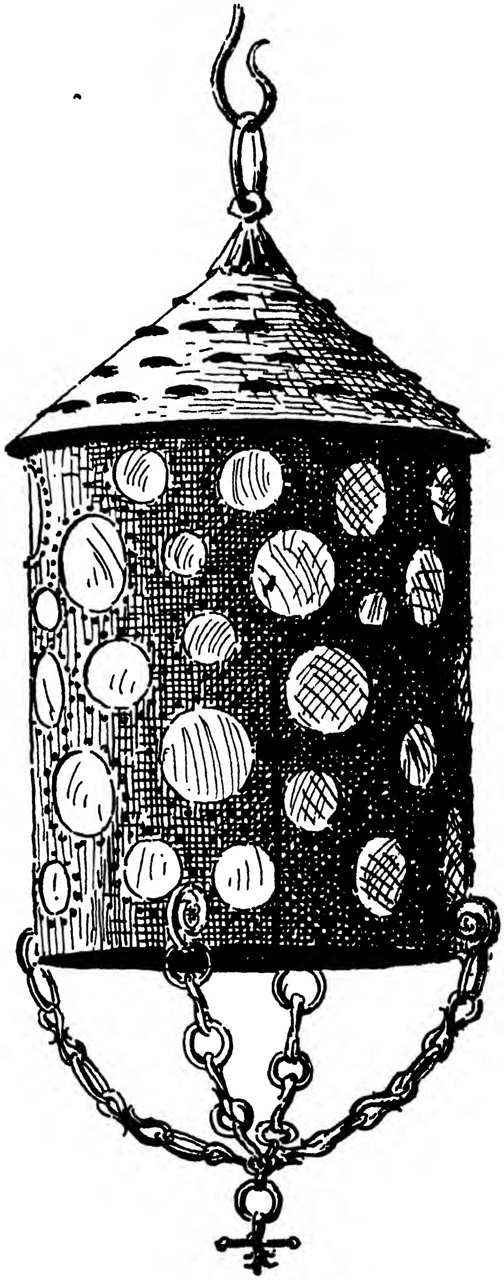
FIG. 251.—DETAILS OF THE HANGING LAMP.



DESIGN 240.—HANGING LAMP (PERSPECTIVE VIEW).



Design 241.—Hall Lantern in Sheet and Bent Iron.



Design 242.—Hanging Lamp in thin Sheet Iron and Iron Wire.

marked *z*, but not too tightly, allowing space enough for the curves shown in the plan and at *o p* to fasten them by flat binding pieces to the circle. To allow for these curves, take a sufficiently long strip of iron. Fasten the curves to the first-made circle, and be sure that the glass fits into it. Before proceeding further, satisfy yourself that you have finished this part of the work properly. The next step is to form the four large curves to which the chains are to be fastened. Two of these are shown in fig. 251. The four curves must be connected at their base with binding wire to the circular band of iron shown at *w*. The main curve of the bracket which holds the lamp should be rather thick, and not too flexible. Before fastening the smaller curves to it, prepare two holes at *b* and *c* as entrances for nails or screws, to attach the bracket to the wall. For point *a* take a double-headed nail (*d*), as it would be difficult to handle a screw-driver at this point. The making of the four chains will not be difficult if you have followed exactly the suggestions heretofore given.

Design No. 242, when worked out in thin sheet iron, some round iron wire, a few pieces of mica, and a little perseverance, produces an old-fashioned hanging lantern. Form a cylinder of sheet iron, about eight inches in diameter by twelve inches high. Before riveting the edges together, lay the sheet out flat and cut round holes all over the surface, and to the inside fasten thin discs of mica, such as is used for doors of stoves. This fastening process will require care, and is a little tedious.

Lay the iron down on a piece of heavy board, having one of the discs of mica under the hole with half an inch of margin all around. With a light hammer and a sharp-pointed awl punch little holes around the edge of the hole in the iron, and, with some small, oval-headed copper tacks, rivet the mica fast to the iron. Repeat this until you have closed up all the holes; then cut out a door four or five inches wide by eight inches high, and roll your sheet in cylindrical form again; rivet the two edges together with copper tacks, and fit the door in place with two small sheet-brass hinges; place a catch on the opposite side of the door, and the body of your lamp is complete. Next make a conical top by rolling a sheet of iron into the proper form; a good pattern may be made first by using a piece of stiff paper, and when the desired shape is obtained, cutting the iron into the same shape. Make crescent-shaped cuts all around the top, as shown in fig. 245, and bend the little ears in to allow a vent for the lamp or candle (fig. 246). Do not bend these little ears down until you have riveted roof or cap together at the edges, otherwise you cannot bend it to form an even round top. Fasten the top to the cylinder with little pieces of L iron riveted to each. The inverted funnel-piece at the top of the lamp, into which the suspending ring is fastened, is a disc of iron frilled into the funnel form and riveted to the top of the roof (figs. 247 and 248). The bottom of the lamp is a stiff piece of sheet iron, with a few small holes punched in it to allow a draught to the lamp. The chains are bent from pieces of iron wire, and are held in place by four scroll-pieces riveted fast to the bottom. All the iron parts should be painted black, and a pretty effect may be lent to the glass by tinting it different colours.

Design No. 241 is for a hanging lantern for a hall; the sides are of sheet iron, with the square holes cut out; or it may be constructed of iron bands, riveted in place with large-headed copper tacks. Small pieces of mica may be used in each opening, or a single large pane of glass that will fill up one whole side. A good height for this lamp is from sixteen to twenty inches from the bottom to the top, not including the ring or scrolls. The scrolls should be made of iron about one-sixteenth of an inch thick and three-eighths of an inch wide. The lantern should be so constructed that one side will act as a door. It should be fastened at one edge with two hinges, and at the other edge a catch should be placed.

APPLIED DESIGN.

PREPARATORY STUDY.

THE elements of Design are form and colour, and these must be combined in accordance with the principles of harmony and symmetry; or, as in the case of many Japanese designs, balance may take the place of symmetry.

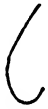


FIG. 252. ELEMENT.

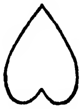


FIG. 253. UNIT.

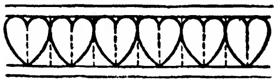
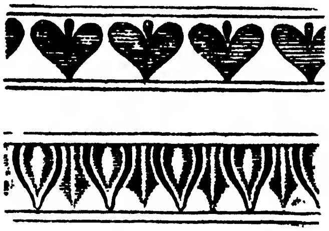


FIG. 254. BORDER.

Symmetry is a repetition of parts. The part which is repeated is an Element (fig. 252).



FIGS. 255, 256.—EXAMPLES OF SIMPLE BORDERS.

When an Element is once repeated, or balanced, it is called a unit (fig. 253). By repeating the unit in different ways, as horizontally, vertically, or about a centre, to cover a given space, you produce a design. Horizontally or vertically repeated, it becomes a border (fig. 254). Repeated about a centre, it produces a rosette (fig. 258). Units or rosettes repeated vertically or horizontally produce all-over or diaper patterns (p. 329).

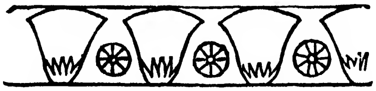


FIG. 257.—ANCIENT EGYPTIAN BORDER (PAPYRUS).

An Applied Design is a design made for some particular purpose: for instance, for a wall-paper, a carpet, an oil-cloth, a china vase, a stained-glass window, or a book-cover. It must be specially suited to the particular purpose and the particular material for which it is to be used.

"Can I prepare myself to become a designer by studying at home?" is often asked. The answer is decidedly in the affirmative.

Let us take the one branch, the making of designs for silk manufacture. Floral patterns are always most desirable for these; therefore the first thing to do is to get an extended and thorough knowledge of all flower forms. Here is where your education can begin at home. If you live in the country, so much the better, because you are more likely to have opportunity for the study of flowers which best lend themselves to graceful effects. Wild or single blossoms are the ones which adapt themselves most readily to the uses of fabric designs. Always begin with simple flowers. Draw carefully, and with great fidelity to nature. Be just as careful, in drawing a flower, to get the exact proportions as you would be if you were drawing from a cast or a model. Do not be afraid that this extreme care will make your work stiff or finicky—dash and freedom of expression will come later.

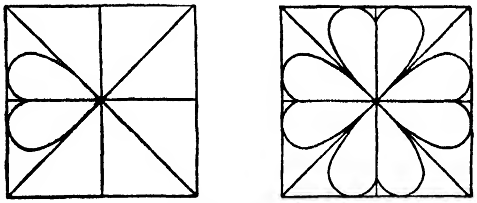
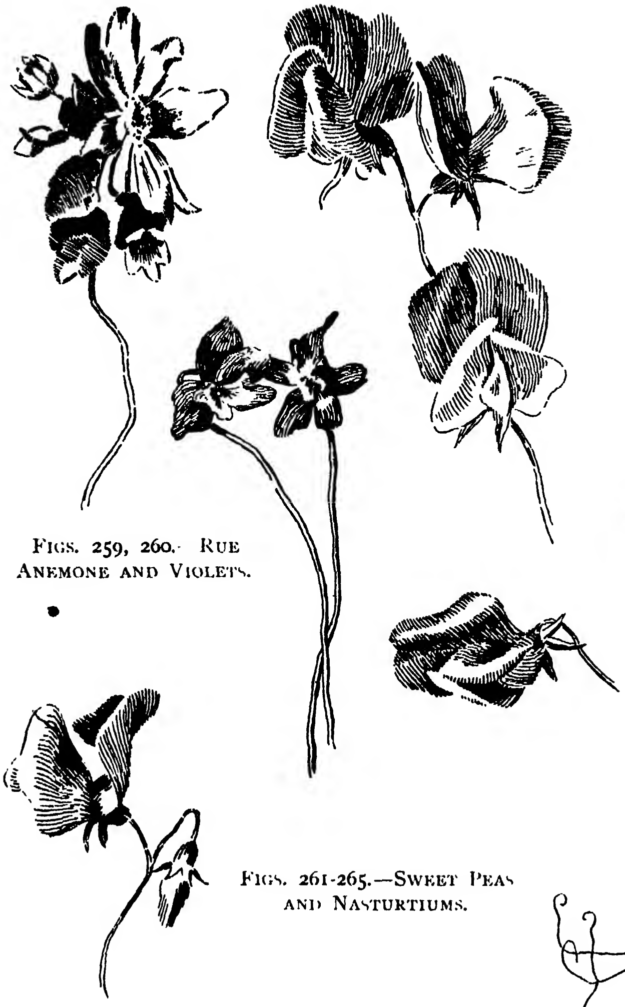


FIG. 258.—A UNIT REPEATED ABOUT A CENTRE, BECOMING A ROSETTE.

In drawing a plant, study every distinguishing point from its cradle to its grave. Of course, you understand you are to draw the entire plant—leaves, branches, and all. Take



Figs. 259, 260.- Rue Anemone and Violets.

Figs. 261-265.—Sweet Peas and Nasturtiums.

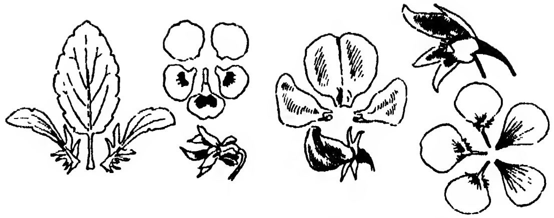


Fig. 266. Fig. 267. Figs. 268, 269.
Analysis of the Pansy, Sweet Pea, and Nasturtium.

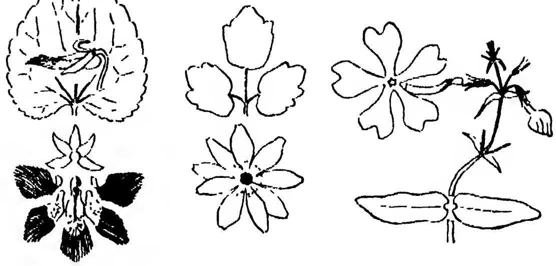
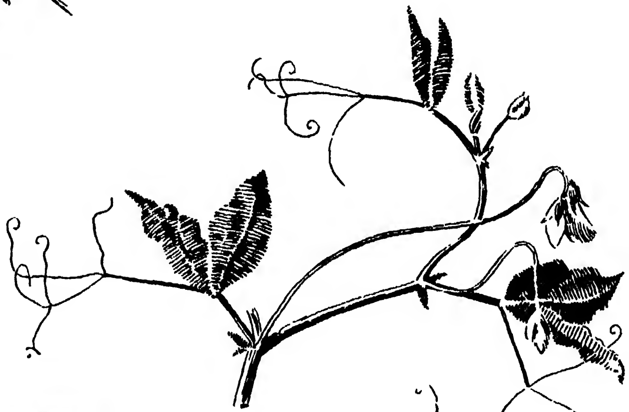
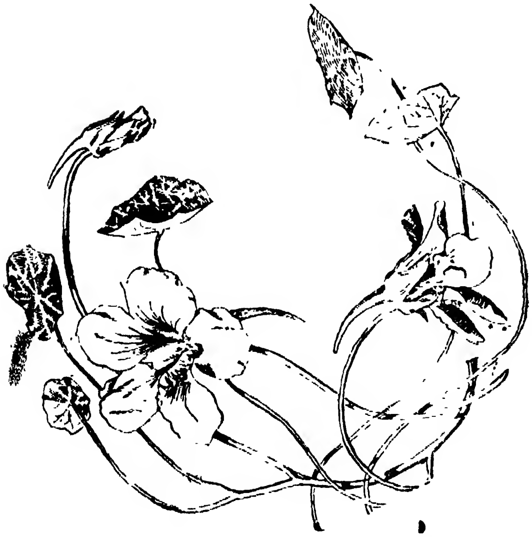


Fig. 270. Fig. 271. Fig. 272.
Analysis of the Violet, Rue Anemone, and Phlox.





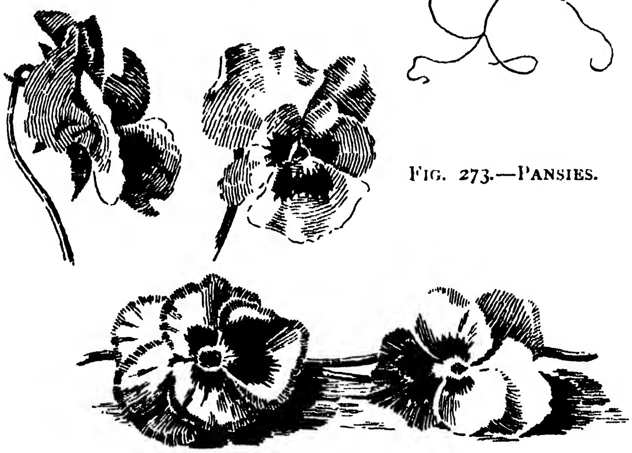


Fig. 273.—Pansies.

Floral Analysis. Hints for the Botanical Study of Simple Flowers.

the young plant, when the buds are just starting; draw it again when it is rich in flower and leaf; and again when the seed-vessel is forming or has matured. The seed-vessels are often very beautiful things in design. In drawing a flower, sketch it from different points of view—full face, profile, three-quarters, back view, or from any angle your ingenuity may suggest; besides being good training for your eye and hand, you will find that a knowledge of all these forms will be useful later on. Draw all kinds of foliage with the same tender care. You know what charming designs have been made from the fern, the ivy, the maple, the Virginia creeper, and many other simpler leaf forms. You cannot tell what possibilities you may yet discover in leaves.

Follow the lead of a plant in studying it. A plant has as much character as a human being. For instance, there are the plants that follow a perpendicular growth, like the lily family. You will notice that they never grow in any other way, and when you come to put them into a design, you will know the nature of the plant too well to distort it into fantastic curves; you will preserve its leading characteristics. Again, some plants follow a lateral growth. In this case, the way in which the branches start and the curves they take should be carefully studied. Then there is the clinging, irresponsible plant, which, like some human beings, clings to a support and follows the line of least resistance. This is true of most vines, though each vine has a different way o clinging—a sort of individuality of its own.

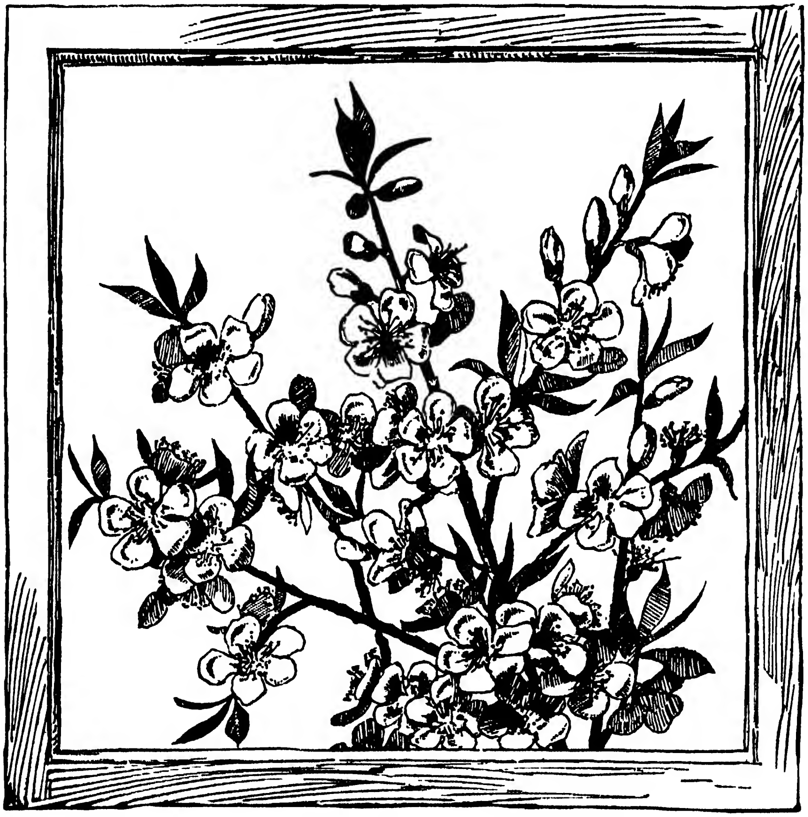


FIG. 274.—ALMOND BLOSSOMS. NATURALISTIC TREATMENT.

It is well to first draw your plant as a whole. Then draw the flower in a dozen different positions. Make separate studies of leaves in different sizes and stages of growth. Be very particular about the ends of sprays. It is well to make distinct studies of these.

Do not shade your drawings until you can draw the outlines well. If you cannot draw correctly the beautiful curves in which all plant life abounds, first work long and patiently at the outlines before doing anything else. When you come to shading, block the shadows—that is, put in masses of shading, without any half-shadows. You will see the reason for this when you begin to apply the plant to practical design.

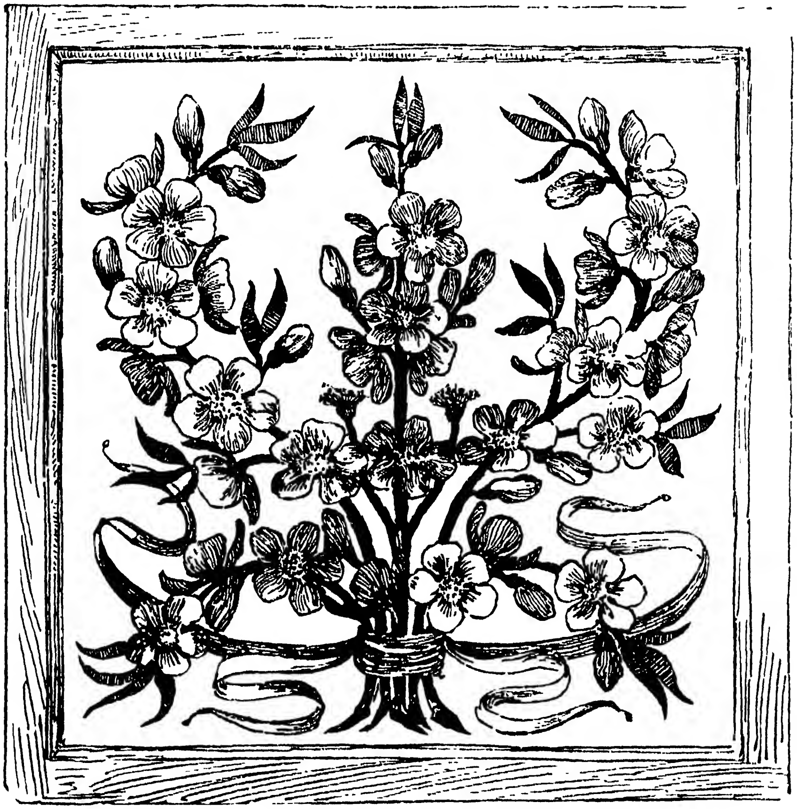
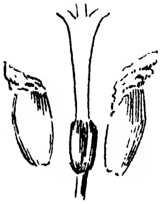
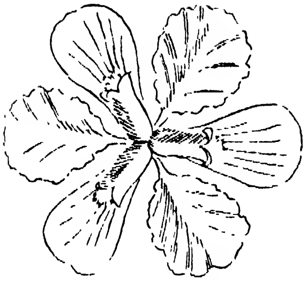


Fig. 275.—Almond Blossoms. Semi-conventional Treatment.

Brown wrapping paper of ordinary quality is as good as anything to draw on; it makes a pleasant background and takes the pencil well. It is advisable to follow a uniform size for your sketches, for the better means of preserving them. Keep every one of your studies; they will all be found useful for reference when you come to apply these forms. Make innumerable drawings of plants, keeping the parts of each one together; you cannot have too many of these studies. If you cannot get just the flower that you want, take anything you can find, and whatever is nearest you. When you draw a separate spray, take that which is most graceful or characteristic.

Another branch of study which can be followed at home, and which is of great importance, is a knowledge of the literature of art. The best artists are broad in their culture. Make yourself acquainted with the styles of designing that belong to different countries and periods. Take up the epochs in art that are famous. Try to find the leading characteristic of this particular style of art—for instance, the art of Italy during the Renaissance. The wood





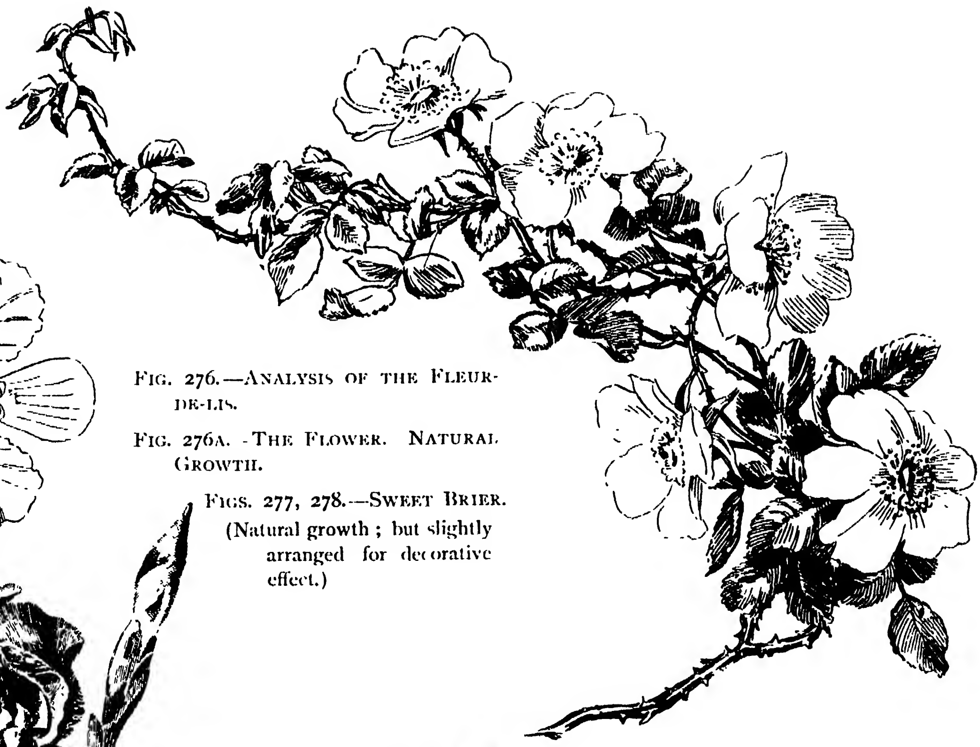
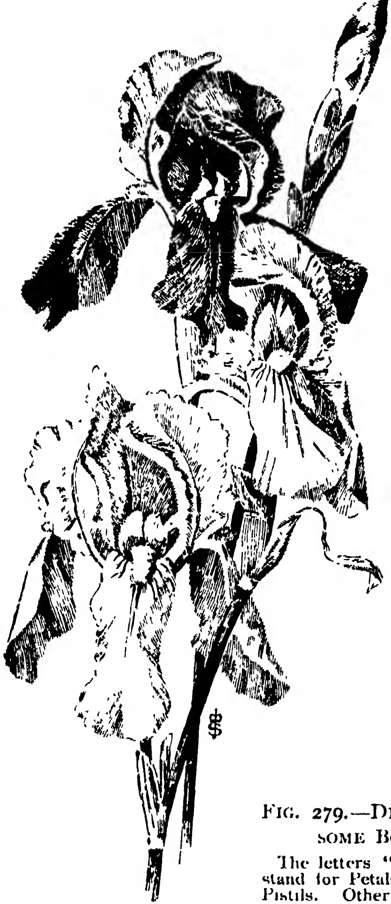


FIG. 276.—ANALYSIS OF THE FLEUR-DE-LIS.

FIG. 276A.—THE FLOWER. NATURAL GROWTH.

FIGS. 277, 278.—SWEET BRIER. (Natural growth; but slightly arranged for decorative effect.)



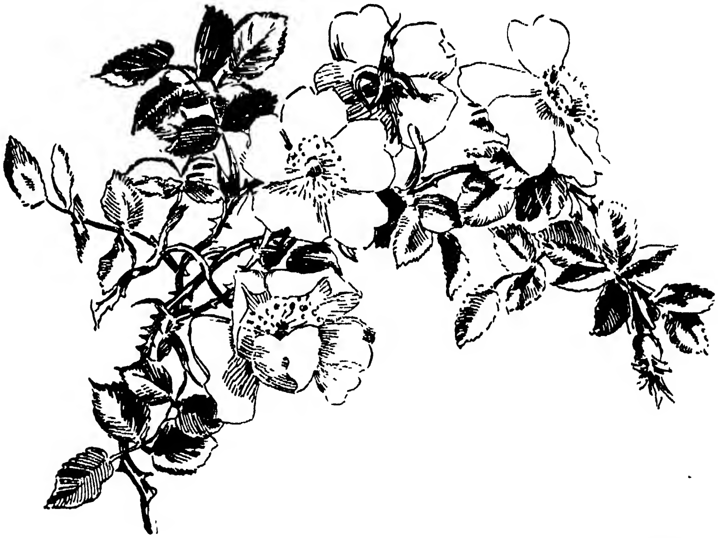
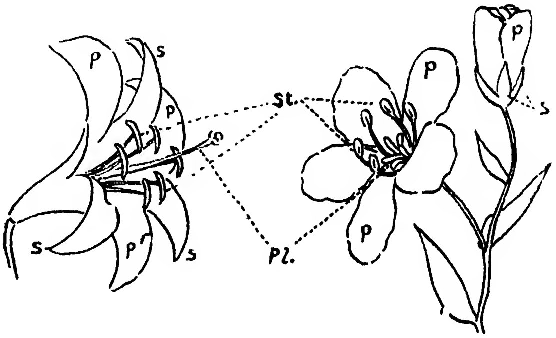


FIG. 279.—DIAGRAM, EXPLAINING SOME BOTANICAL TERMS.

The letters "*P*," "*S*," "*St.*" "*Pl*," stand for Petals, Sepals, Stamens, and Pistils. Other common terms are as follows:—***Anther***, the outer part of a stamen; ***Axil***, the angle between a leaf and the stem on the upper side; ***Axillary***, situated in an axil; ***Bracts***, the leaves of a flower cluster; ***Calyx***, collectively, the sepals; ***Corolla***, collectively, the petals; ***Corymb***, an unevenly branched flower cluster whose outer flowers open first; ***Cyme***, like the corymb, except that the inner flower opens first; ***Involucre***, a set of bracts around a flower cluster; ***Ovary***, the seed-vessel; ***Pedicel***, the footstalk of each separate flower of a cluster; ***Peduncle***, a flower-stalk; ***Perianth***, collectively, the calyx and corolla; ***Petiole***, the footstalk of a leaf; ***Pistil***, the seed-bearing organ of a flower; ***Sepal***, a leaf of the calyx; ***Serrate***, saw-toothed; ***Sessile***, sitting, having no footstalk; ***Stamen***, an anther and its support; ***Stipules***, leafy appendages at the base of a leaf-stalk.



carvings, stone, and metal work of this period are rich in suggestions. It is astonishing how marked is the difference in taste of different nations, and how distinctively this taste has found expression in each nation's art. Every one has some peculiar virtue for which it is worth studying. Even the most primitive art offers suggestions of value. What a field, for instance, Celtic art alone opens for suggestion in modern design!

When you have acquired some knowledge of the literature of art and a good deal of geometrical and plant and other natural forms, take up the study of ornamental construction with Mr. Lewis F. Day's "Anatomy of Pattern" (B. T. Batsford, publisher, 52, High Holborn). Follow with Mr. Gleeson White's "Practical Designing" (Geo. Bell & Sons, York Street, Strand), an invaluable collection of professional hints by specialists, for the preparation of working drawings so that, technically, they would be acceptable to manufacturers of wall-papers, carpets, floor-cloths, woven fabrics, pottery, metal work, stained glass, and bookbinding. Intelligent assimilation of the contents of these two little volumes will be the best possible substitute for that practical knowledge of the application of design to manufactures which, in certain branches, can only be acquired through actual connection with the factory.

NATURAL AND CONVENTIONAL ORNAMENT.

PRACTICAL knowledge of the application of design to manufactures, as we have remarked, can in certain branches only be acquired through actual connection with the factory, and the wise student would gladly avail himself of any opportunity leading to that end, no matter how humble might be the capacity in which he might find employment. But it is not there that he need expect to learn Design.

What is called designing in most factories, and even in most schools where they pretend to teach design, is simply the adaptation of old ideas to new requirements, a work which certainly calls for judgment and taste, but which is not original design. The problem usually set before a designer is, given a certain space, to decorate it in a given style, and his way of setting about it is simply to turn over a book of plates or photographs and see what he can take from this and what from that. Of course, there is not much room for originality, nor consequently for any real interest in such work; and when repeated, as it is, with mechanical exactness and without limit, it is hardly wonderful that so much of it should be found more tiresome than the blank spaces that it is supposed to decorate. But amateurs go too often to the other extreme, and, tired of the mechanical repetition of known forms, copy Nature in all her irregularity. The middle way is the right way.

A geometrical groundwork is the common element in all good design. More than this, geometrical—that is, regular—forms by themselves mav produce very fine designs; irregular forms will not, unless they are regularly disposed. This is not, as is sometimes stated, a result of technical conditions. It is a taste which is common to all humanity; for it may be laid down as a rule that, other things being equal, we all prefer regularity to irregularity and order to disorder. The aim of all art—in fact, even of the most naturalistic—is to accent and bring out the order that we find in Nature.

The first thing for the young designer to do, then, is to work out in the proper materials simple geometrical designs. That will teach him their great decorative value, and give him a training which will always be useful.

When he has made himself familiar with the beauty that may be got out of simple combinations of squares and circles, stars and crosses, and the like, he may look for something of the sort in Nature, and he will find hints of it on every hand in the utmost abundance and variety, but very seldom, indeed, more than a hint. All low-ground plants and most free-growing twigs, when looked at from above, show as crosses or stars or rosettes of leaves, but all more or less irregular. But in reducing these forms to ornament it will be found best to stop short of absolute regularity, for it gives an additional pleasure to preserve something of the play and freedom of the natural form.

This brings us to the consideration of what is meant by conventionalising. The term may be defined as the making of an ornament from a natural form, without destroying the identity of the form itself, the less important features being subordinated to the limitations of the material to be decorated.

In each handicraft conventionalising has its peculiar limitations and differences. The treatment demanded in one case may be improper, or, at least, undesirable in another. For instance, the worker in *cloisonné* enamels of necessity outlines his design with a clearly defined line of metal; but it does not follow that the china decorator should imitate him with a line of colour, such as is often seen in the work of more than one pottery of reputation. There are, of course, cases where a clearly defined outline, of more or less delicacy, is necessary to give relief from the background and add character, where the worker is denied the many helps of light, shade, and colour, which would be available in a more pictorial treatment. As we have said, the line of the *cloisonné* workman is a necessity; there is an apparent reason for its being, as there is for the decorative lead lines in painted glass and the "couched" outline in embroidery.

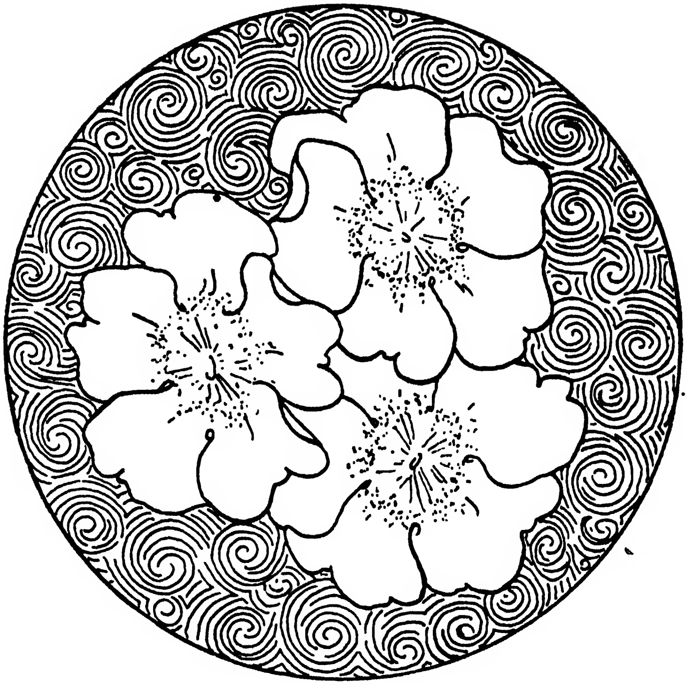


FIG. 280.—WILD ROSE. DECORATIVE, BUT NEARLY NATURAL TREATMENT.

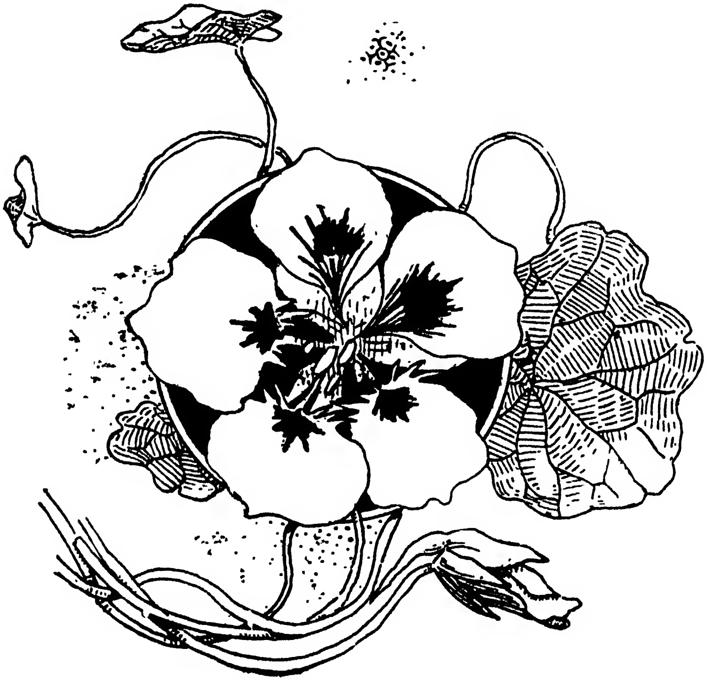
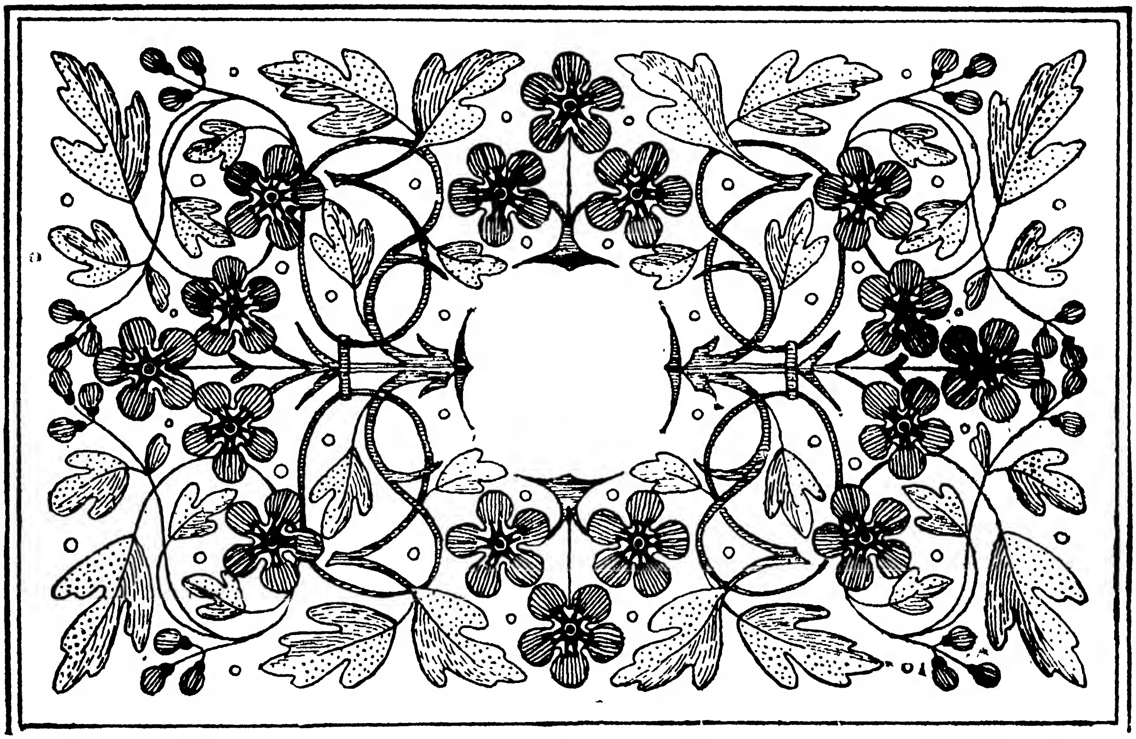


FIG. 281.—NASTURTIUM AND LEAVES. DECORATIVE, BUT NEARLY NATURAL.

A semi-conventional arrangement of some flower or shrub retaining its more essential characteristics is apt to be more beautiful than the severely conventional treatment of the same motive would be, and at the same time conform to all technical requirements. The two treatments of the almond-blossom (figs. 274, 275) illustrate this point. The first is a free-hand sketch indicating, so far as composition is concerned, no special thought beyond the limits of the surface to be covered. Its beauty would depend principally upon the skill with which it is coloured and the plant imitated. If a masterly bit of flower-painting, it would deserve the best light and position in the room, and should not be relegated to fill an obscure corner which would be as well supplied by such a panel as the second. The latter shows an artificial or conventional arrangement of the same plant forms. It might be painted in monochrome and still be pleasing, because of its unpretentiousness; but such a decoration is very attractive when the coloration follows pretty closely that of nature and the conventionality is confined to general outline and background. Such a painting painted on porcelain, for instance, would be suitable for a door-panel or a cabinet, a position that would destroy the beauty of the first because of the ever-changing light that would be thrown upon it.



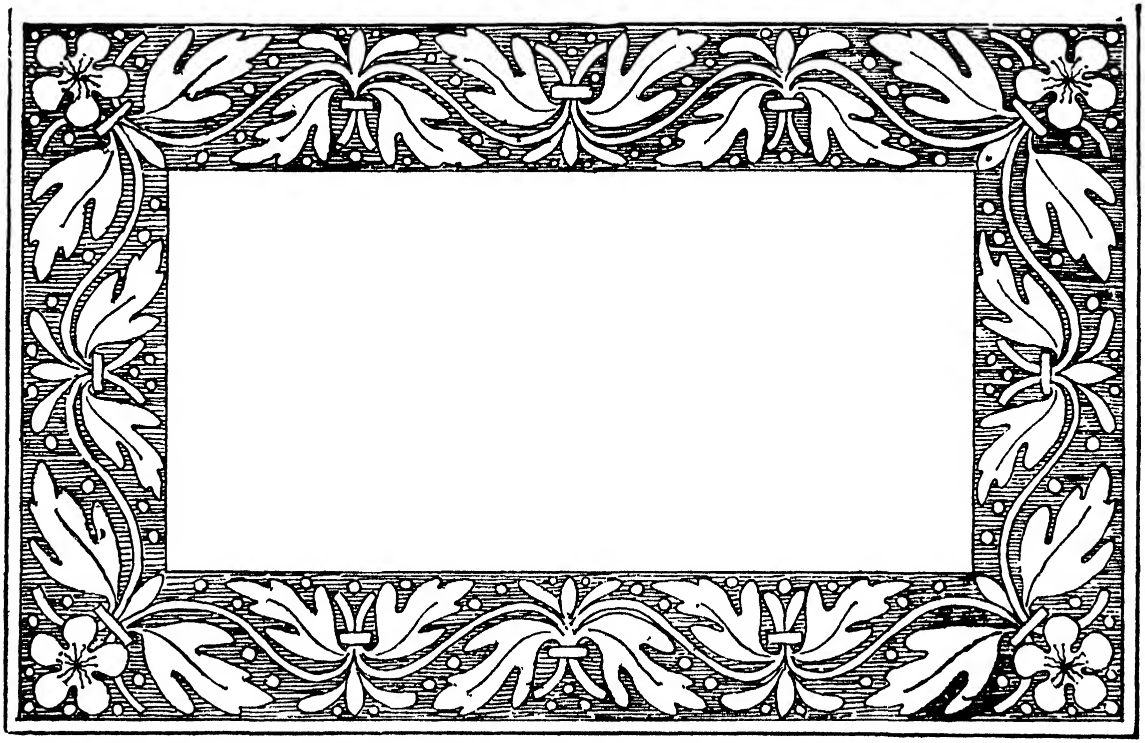
DESIGN 243. —THE HAWTHORN. CONVENTIONAL TREATMENT. ESPECIALLY SUITABLE FOR PYROGRAVURE.

It will be observed that this design is equally available used vertically. It was originally intended for a book-cover decoration.

That it is possible to depart much further from natural form without sacrificing the beauty of the motive is well illustrated in the four different treatments of the hawthorn blossom shown on pages 401, 402, 403, and 417, although in the final example the limits of conventionalisation may be said to be well nigh reached.

THE CONSTRUCTION OF ORNAMENT.

Mr. Day observes that the popular idea of the process of ornamental design is that the artist has only to let his hand crawl over a piece of paper, and, like a spider, spin out the fancies that may crowd his fertile imagination. He shows that, on the contrary, "ornament is constructed patiently, built up on lines inevitable to its consistency—lines so simple that to the expert it is not difficult to lay bare its very skeleton; and just as the physiologist divides the natural world, according to anatomy, into families and classes, so the ornamentist is able to classify all pattern work according to its structure, and to point out how few are the varieties of skeleton on which all this variety is framed." For all repeating pattern of every school, from the set details of the classic to the luxuriance of Arabic ornament, from the stiff simplicity of savage pattern to the intricate naturalistic decorations of Japanese art, is and must be built up upon a geometrical framework.



Design 244.—The Hawthorn. Conventional Treatment. Suitable for Pyrogravure, Gesso, and Wood-carving.

This design, like the preceding one, is equally available used vertically. It was originally intended for a book-cover decoration.

Through the courtesy of his publisher we are allowed to reproduce some of Mr. Day's ingenious demonstrations of "The Anatomy of Pattern."[1] (See pp. 404, 406, 407.) In this treatise the number of skeletons revealed and shown to underlie the whole mass of repeated patterns is singularly few. The stripe naturally comes first, with its near kin the cross line, yielding various checkers, and by simple steps all the different frets and lattices, interlacings and traceries, founded on parallel lines crossing each other at right angles, or diagonally. Because almost always, in the case of manufactured articles, a repeated pattern is printed from a square block (or the surface of a roller which is practically the same shape, or else woven into a square piece of the pattern), it might easily be inferred that all repeated patterns are based upon squares like those of a chessboard; but, as we discover later on, the diamond so nearly allied is even more powerful; for it provides the "drop," one of the most valuable devices to avoid the too obvious

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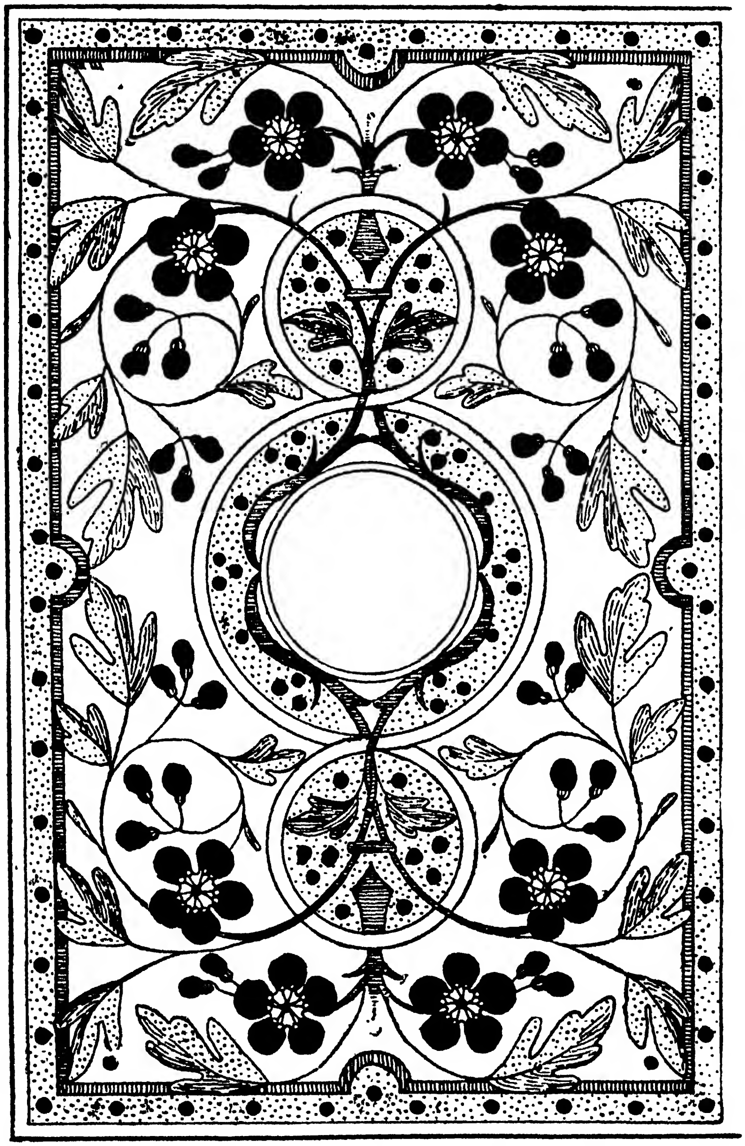
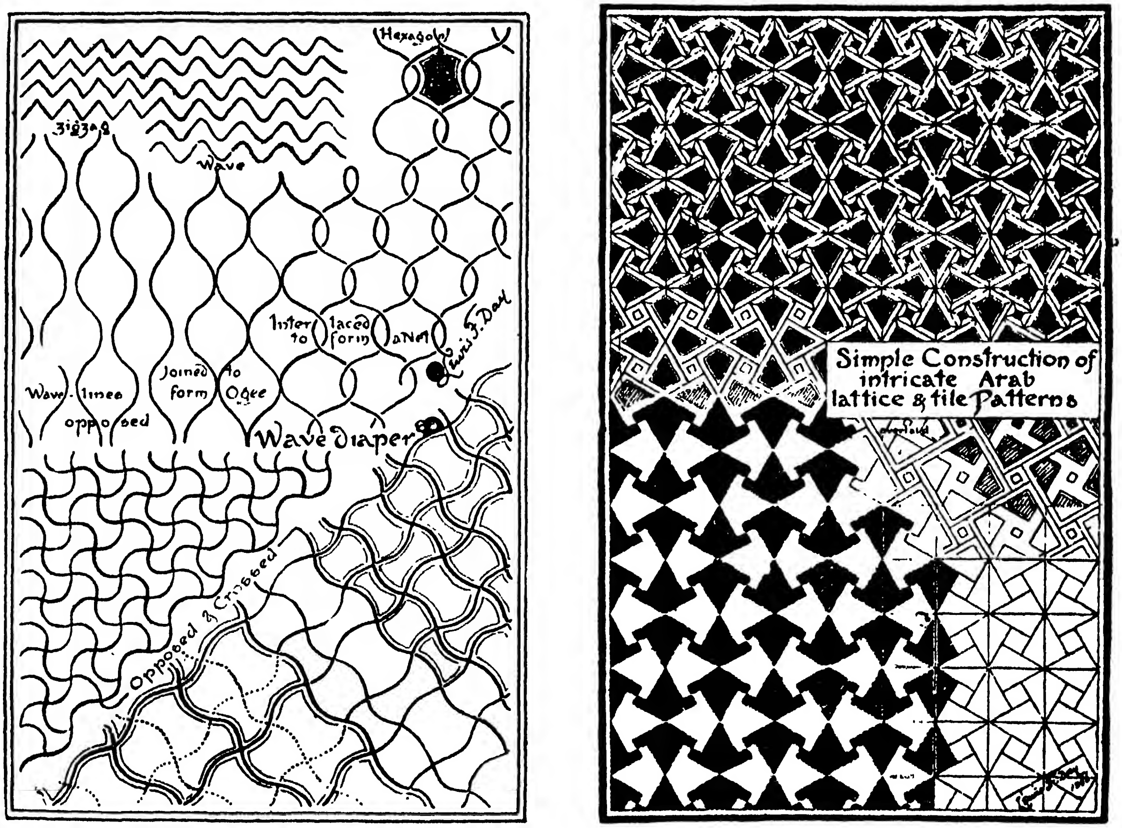
[1] "The Anatomy of Pattern," B. T. Batsford, Publisher.



DESIGN 245.—THE HAWTHORN. CONVENTIONAL TREATMENT. ESPECIALLY SUITABLE FOR PYROGRAVURE.

monotony of a series of checkers. The diamond again is further elaborated by cutting it in half; whence we obtain the triangle, with the nearly related hexagon on which is built the whole of the honeycomb ornament.

So far we have considered skeletons based upon straight lines only. But even with these we have already the basis of that infinity of geometric pattern found in Byzantine and Moorish decoration. But with the introduction of waved lines, as those in fig. 282, new series of diapers are revealed that in effect, entirely distinct from checker or diagonal lattices, are yet based upon the latter to an extent that is simply surprising when it is pointed out so clearly as Mr. Day, by diagram and comment, has managed to show it in his treatise. Take, for instance, the Arab pattern shown in fig. 283, apparently complicated beyond measure: by the logic of actual experiment he proves it to be based upon the diamond, the square, or the interlacing circles. Whether the skeleton of such construction is hidden by overlaid ornament, as in the elaborate patterns of Moorish art, or is merely taken as the groundwork of repeated spots, or as the imaginary centres whence the circles are struck, a few unalterable plans govern the whole field of repeating designs in all classes of decorative art work.


Hexagon
Zigzag
Wave
Inter- to laced form and
Lewis F. Day
Wave-lines opposed
Joined to form Ogee
Wave Diaper
Opposed & Crossed
Simple Construction of intricate Arab lattice & tile Patterns

FIGS. 282, 283.—DEMONSTRATIONS OF "THE ANATOMY OF PATTERN," BY LEWIS F. DAY.

From the specially shaded parts of the design in fig. 287, we see how a repeated pattern that is a common type of decoration upon all sorts of fabrics may be taken as built either upon the square, the diamond or the oblique diamond, and yet in each instance be repeated accurately.

The block of twenty-one inches is generally adopted as the standard for all printed fabrics and wall-papers. With this inflexible size there are some startling limitations. For instance, the hexagon can only be applied to such a square on a very small scale.• As Mr. Day remarks, "If you made your hexagons touching in honeycomb fashion ten and a half inches wide, so as to get two in the width, they would not come true in length; they would be too long. If you made them true they would not fill the square, but only a space about 21 x 18. Three and a half hexagons in the width would work, but only as a 'drop pattern' that would give hexagons of six inches across. In order to occupy the square with true hexagons, repeating without a 'drop,' they would need to be reduced to half that size—that is to say, there would have to be seven hexagons to the width, measuring each only three inches across." This one instance "shows how very strictly the artist is bound by considerations which rarely occur to the uninitiated—considerations which have always had a great deal to do with the design of pattern work."

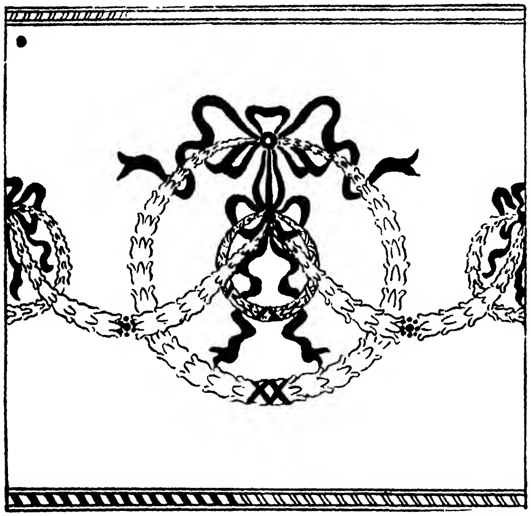


FIG. 284.—A "PLAIN MATCH" (FOR A FRIEZE).

All designs for industrial purposes that are to be applied to the fabric by machinery, by printing or weaving, and that are to be placed together to fit a given surface, must contain a match and a repeat. A repeat is the pattern repeated. The lower part of the design, where the forms appear to be cut off, must exactly match the forms repeated at the upper part of the pattern. The two parts when repeated, as they are through thousands of yards, must form a perfect whole.

Look at any length of good wall-paper, and you will readily see that the match is so perfect that you cannot discover the repeat. Of matches there are three kinds—"plain," "drop," and "turn-about." A plain match is one in which the two parts of the same figure are directly across the breadth of the paper from each other. This is the simplest form of match.

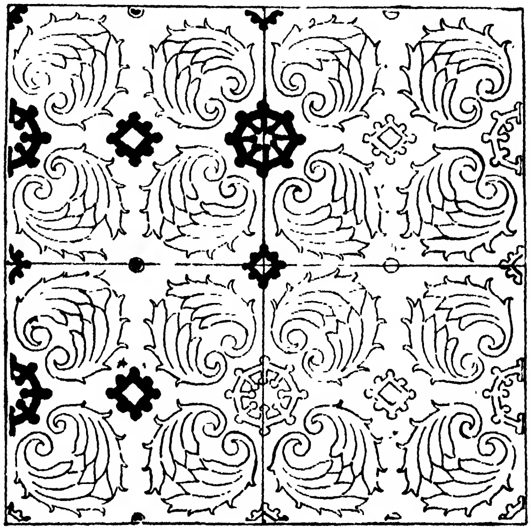
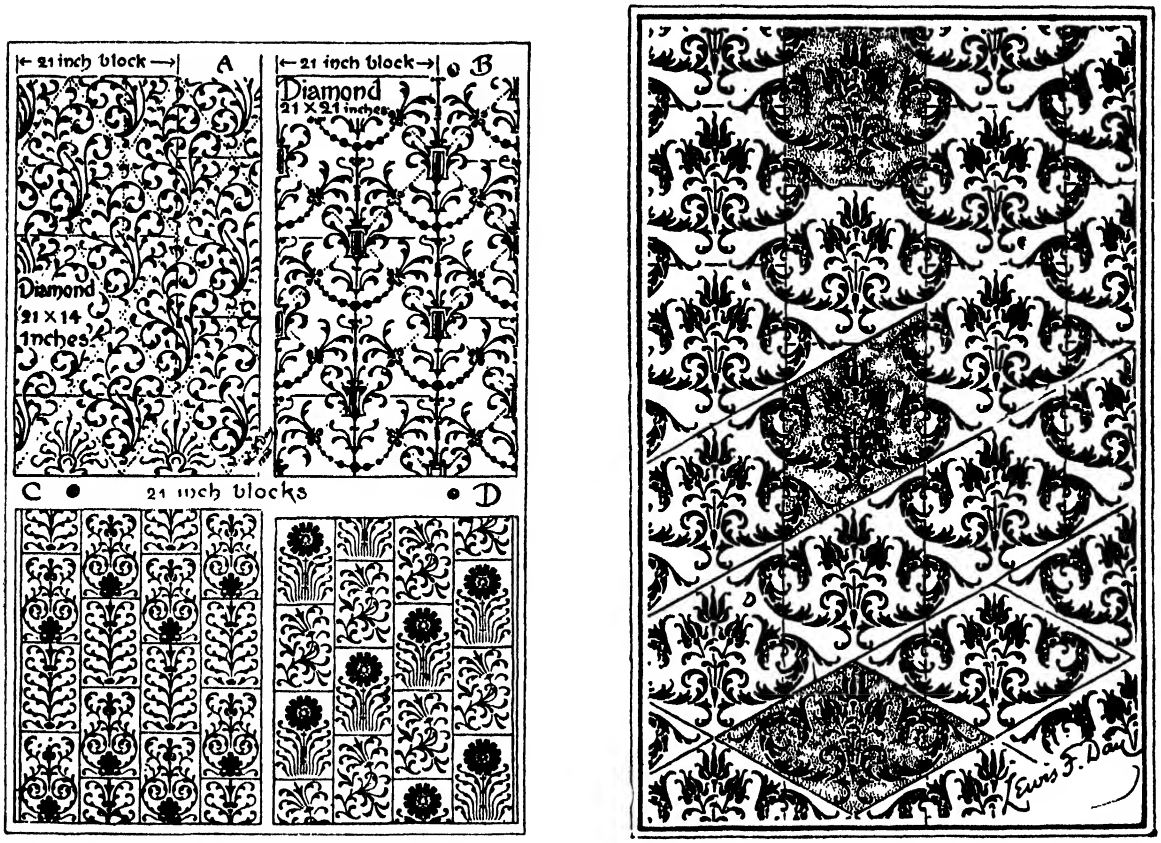


FIG. 285.—A "TURN-ABOUT MATCH."

The "drop" is a device by means of which the designer is enabled, without reducing the scale of his work, to minimise the danger of unseen stripes in the design, a danger which is always imminent when the repeats occur side by side upon the same level. For a design printed or woven in squares obviously must have the pattern so arranged as to correspond precisely with the design upon the other half of the material that is to be joined to it. In any wall-paper this joint is easily traceable; but by the drop pattern, although the piece of stuff will fit to the side of its fellow, the pattern does not occur exactly on the same level. In the designs on fig. 287 and the upper pair on fig. 286 we see the diamond yielding this drop; in the lower designs of fig. 286 square blocks are so arranged to give the same effect. This feature applies equally to carpets—in fact, to all surface ornament.



FIGS. 286, 287.—BY LEWIS F. DAY (FROM "THE ANATOMY OF PATTERN"). ILLUSTRATING THE "DROP MATCH," AND THE EFFECT OF THE DROP, ACCORDING TO ITS LENGTH, ETC.

The right-hand example (No. 287) shows three plans, on either of which the same simple pattern may be produced.

In the "turn-about" match (fig. 285) only one-fourth of the pattern is made, and the machine in turning about completes the figure. This is the economy of design, for a pattern only six inches square when completed by the machinery is twelve inches square.

How to Prove a Design by refitting its component parts is shown by Mr. Day in fig. 288. The worker is advised not to attach great value to the appearance of the design as a drawing, but to cut it up deliberately and rearrange the parts in order to prove the repeat. This is one of the practical devices that an amateur would be fearful of trying, were it not recommended by one who knows. No amount of accurate measurement can give so certain a result as this cutting up and re-arranging the actual drawing. By this means you see at once the way each line or curve meets its fellow and how far it disguises the joint which, if allowed to betray itself, ruins the design as a whole.

WALL-PAPER.

MANUFACTURERS, as a rule, prefer simple patterns conventionally treated to floral and other patterns needing many printings. The more colours, *or shades of the same colour*, that are called for in a design, the more printings are required to reproduce that design, and hence, as a rule, the smaller the chance of its acceptance by the manufacturer. In estimating the number of printings required, each shade has to be reckoned as a separate colour, because it calls for a separate printing. A single printing will only give a perfectly flat impression—*i.e.*, uniform in light and shade. The only possible modification of this uniformity is by means of stippling (see p. 61), which breaks the tones of the parts so treated. This device is seldom resorted to except in the case of very cheap wall-papers, and need not be taken into account by the novice in designing.

Avoid the use of pronounced figures and any arrangement that tends to produce the effect of horizontal lines, and remember that although a pattern may be pleasing on a small piece of paper, it may weary the eye and lose character when spread over a large surface like that of a wall.

More than ordinary ingenuity is required for borders, even when not elaborate in design, for they have the disadvantage of perpendicular and horizontal positions. The field, in general colour and arrangement, is like the hanging, but the guards are darker and stronger in colour, and unless they are only bands they are composed of conventionalised leaves or flowers, or it may be of geometrical figures.

Dimensions of a Design.—Almost invariably the dimensions of a design for an English wall-paper are 21 in. × 21 in., the paper itself being 22 in., the extra inch allowing a margin on each side for the register[1] of the block in printing, and also as a protection to the edges of the roll.[2] The space, 21 in. × 21 in., may be divided into squares of five different dimensions as follows: First, four squares of 10½ in. × 10½ in.; second, nine squares of 7 in.; third, sixteen squares of 5¼ in.; fourth, twenty-five squares of 4⅕ in.; fifth, forty-nine squares of 3 in. Mr. George C. Haité, in his admirably lucid paper on Wall-Papers, in "Practical Designing," which no student of the subject can afford to miss, points out that these five divisions of the space "would limit the fancy and play of the designer, were it not possible to get over the difficulty by a still further division of the

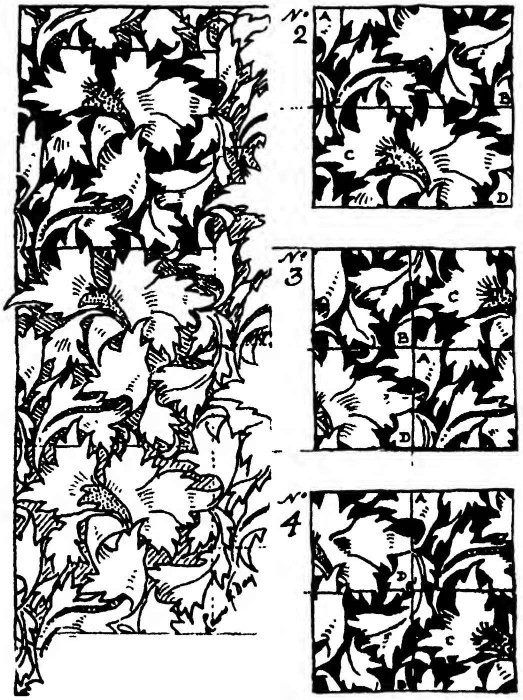


FIG. 288.—DIAGRAM BY LEWIS F. DAY, SHOWING HOW TO PROVE A "DROP" DESIGN.

(From "The Anatomy of Pattern." B. T. Batsford, Publisher.)

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[1] The *Register* indicates on the paper the limits of a certain colour, upon which the successive printings of the other colours of the design must not impinge. The adjustment of the register in all colour printing must be extremely accurate.

[2] The length of a roll of wall-paper is twelve yards.

width by means of what is called *stepping* the design — a method which is most valuable and of frequent use; for it is not only that by this means a different *scale* of work is possible, but that by its adoption we are enabled to better disguise the 'repeat' and to render the effect of a mass of 'repeats' covering a large surface more satisfactory and pleasant in line."

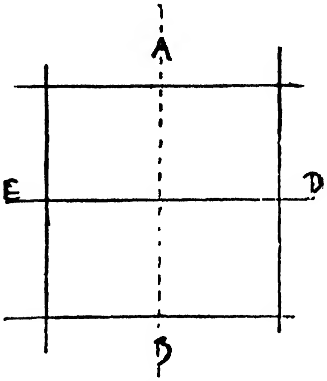

FIG. 289.—THE "REPEAT" PRINCIPLE.

The sides, C, D, must join, and the top, A, must join the bottom, B.

The Repeat.—The principles of the "repeat" and the application of the device of "stepping" are set forth clearly by Mr. Haité.[1] A pattern, he says, "should either boldly declare its repeat, and indeed make a feature of it, or it should not be noticeable at all; and, further, all repeats should be pleasant to the eye, avoiding disagreeable lines, some of which may even make the wall appear out of the upright or undulating. Unless intentional, as a feature of the pattern, it is well to disguise *all* lines. The perpendicular is less objectionable than the horizontal, and the true diagonal line less so than either." A practical explanation of the meaning of "repeat" is given in fig. 289: the sides C and D must join, and the top, A, must join the bottom, B. The difference between the sides and the top and bottom of a wall-paper is that "on the sides the repeat must be cut off absolutely in a straight line, and join; while at the top and bottom figures—such as a small rosette, a leaf, or centre of a flower—may be allowed to complete themselves, and the top be made to *fit into* the bottom (fig. 290); but in designing it is always desirable to run the drawing over the lines of repeat and make it fit into both sides and bottom, as in fig. 291."

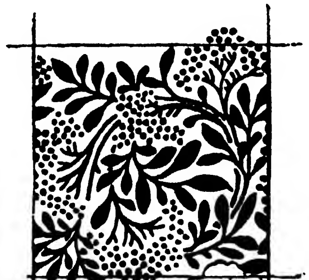

FIG. 290.—THE "REPEAT."

The pattern is cut off at the sides, but fits in top and bottom.

"**Stepping**" is illustrated in figs. 292, 293, 294.

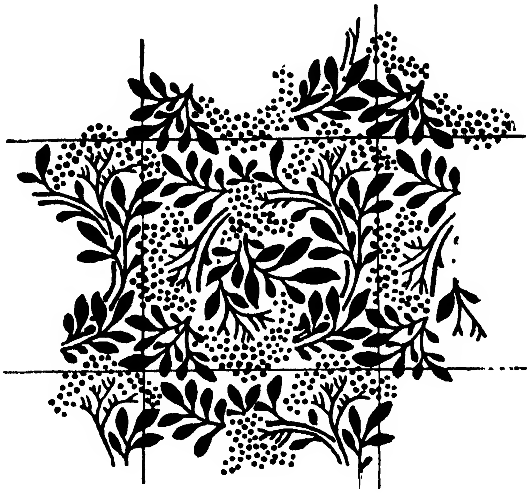

FIG. 291.—THE "REPEAT."

The drawing is run over the lines of "repeat" and made to fit into both sides and bottom.

"The step is the division of the space into half, and the top left-hand corner, C, is made to join the *centre*, D, on the right-hand side instead of at the top. The ordinary method of repeat would be that shown in fig. 294, but it will be seen that the flowers fall in horizontal lines, while it may be desired that the flowers should form diagonal lines, and at the same time *suffer no loss in scale*. This can only be done by stepping on the sides of the pattern, as shown in fig. 292, and get the result as in fig. 293."

It is always wise to colour designs before offering them for sale, as manufacturers do not like to select from mere sketches. Colour rather more than one complete section, so as to prove the accuracy of the repeat.

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[1] We are indebted to the courtesy of the publishers, Messrs. Geo. Bell & Sons, for the use of these diagrams, from "Practical Designing."

TEXTILES—CARPETS.

THERE are three ways of applying a pattern to a fabric: First, by printing the design on the material after it is woven, as in calico, oil-cloth, and linoleum; second, by printing the pattern on the threads before they are woven, as in tapestry Brussels and tapestry velvet carpets; and, third, by taking various coloured threads and bringing them to the surface wherever the pattern requires by means of the Jacquard loom, as in body-Brussels and Wiltons.

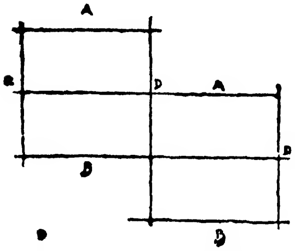

FIG. 292.—THE "STEPPING" METHOD.

The great desideratum in making designs to be printed is to use as few colours and make each colour produce as much effect as possible; for the reason that in printed goods each colour introduced calls for a separate block with such parts of the design as employ that colour cut upon it. Each block is an additional expense, and although a calico or chintz printed in seven colours will bring no higher price to the manufacturer than a piece requiring only one, still it costs him seven times as much to have the blocks cut for printing it, and therefore his profits will be so much the less. It is the lack of knowledge on this, among other considerations, in the preparation of designs offered for sale by amateurs inexperienced in the requirements of the trade, that almost invariably renders them unavailable.

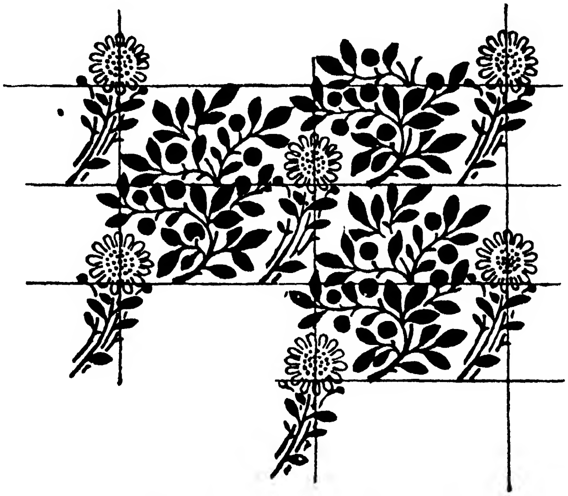

FIG. 293.—"REPEAT" BY THE "STEPPING" METHOD.

How much may be done by the skilful use of a single colour is illustrated in fig. 295, which shows how four effects or shades may be gained by using only black. We have here white (the cloth itself), light gray, dark gray and black. If in place of the black we use blue in the same way, we have white, with light, medium, and dark blue, still using but one colour. There are many ways in which a skilful designer can make admirable use of one or two colours; each additional colour greatly increases his resources for new effects, so that to the uninitiated it would always seem that there are many more colours employed than there really are.

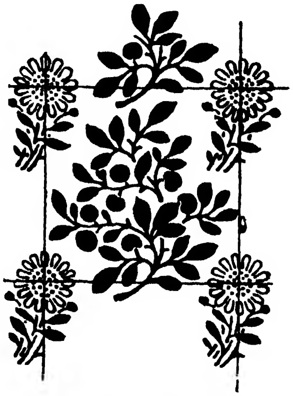

FIG. 294.—ORDINARY "REPEAT."

In the second method of applying a design (where the printing is done on the threads before they are woven), it makes but little difference how many tints are used. One dye being of the same price as another, or at least the difference in price being but slight, it is little matter which colour box is brought into requisition. In printing the threads a large drum (illustrated herewith) is used, around which the threads are wound. On one edge of this drum are ratchets as far apart as the width of a print—about three-eighths of an inch for a tapestry Brussels and half an inch for tapestry velvet. As this drum revolves, a colour box in which there is a revolving wheel passes back and forth under the drum, the wheel in the box carrying the colour or dye up and printing a line of colour across the threads on the drum during its passage. If the pattern requires the same dye for several loops in the carpet the same colour box goes back and forth the requisite number of times. If a different colour is required, a different colour box is substituted, until the wool is all dyed, in bands of colours of different widths. The skein is then removed from the wheel, steamed to set the colours, and forms a single thread throughout the length of a breadth of carpet. Thus line after line is taken until enough are printed—no two alike—to form the entire pattern.

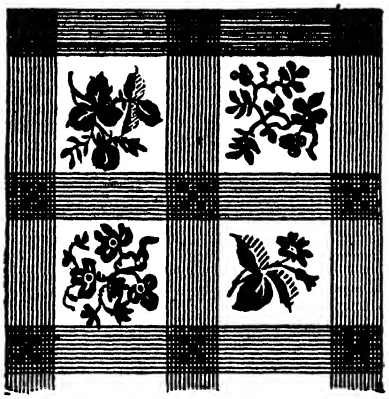

FIG. 295.—APPLIED DESIGN. PRINTED FABRIC.

Showing four effects or shades that may be gained by using only black.

For a five-frame body-Brussels but five colours may appear in any one line throughout the length of a breadth. If you wish, five entirely distinct colours may appear on the next line, and so on. Therefore, although there can be but five colours in any one line, still there may be many colours in the carpet.

Opposite is shown a section of a five-frame body-Brussels design with eight colours in all, but so arranged that only five colours appear in any one vertical line, as may easily be seen by the "plant," as it is technically called.

Mr. Alexander Millar[1] broadly divides carpets into three classes (*i.e.* for designing purposes), as follows: (1) Those in which the design is produced by the action of a Jacquard loom; (2) those which may be grouped under the head of Axminster; (3) tapestries. In the first class (in which are included Brussels and Wilton, and also Kidderminster carpets) there is a limit to the number of colours employed. In the second and third there is theoretically none. For designing purposes Brussels and Wilton carpets are identical; either can be woven from a design prepared for the other; in Wilton, however, the design will come out a very little shorter than in Brussels.

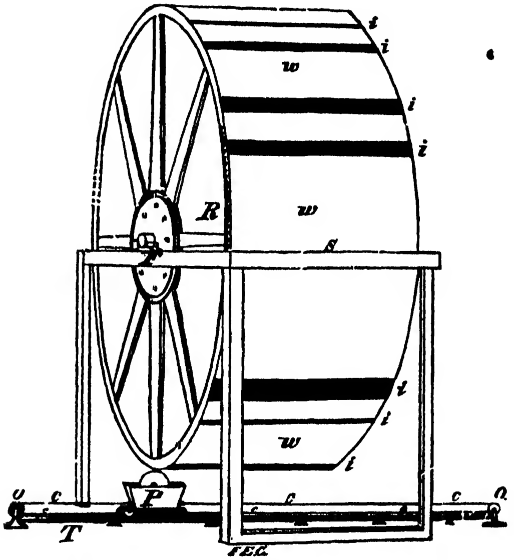

FIG. 296.—COLOURING DRUM USED IN APPLYING DESIGNS.

w, wools; *i i*, colours printed on the wools; *R*, ratchets; *F*, frame to support drum; *S*, where girls stand to comb wools; *T*, track for the colour box; *P*, colour box; *O*, pulleys; *c*, *c*, endless chain for drawing colour box back and forth.

Brussels designs for filling are always 27 in. wide. Borders may be 13, 18, or 22½ in. The most usual width is 18 in. Full-sized design paper is often used, but many prefer a paper which is rather more than half-size—16 in. wide, representing 27 in. Whichever is used there should be 9 points to the inch in the length, and 256 points in the

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[1] "Practical Designing" (Geo. Bell & Sons, publishers).

27-in. width. There is no fixed rule as to length, but from 27 to 36 in. is suitable for small designs, and 45 to 54 in. for large ones. The length should be no greater than is necessary to avoid too frequent repetition of prominent objects.

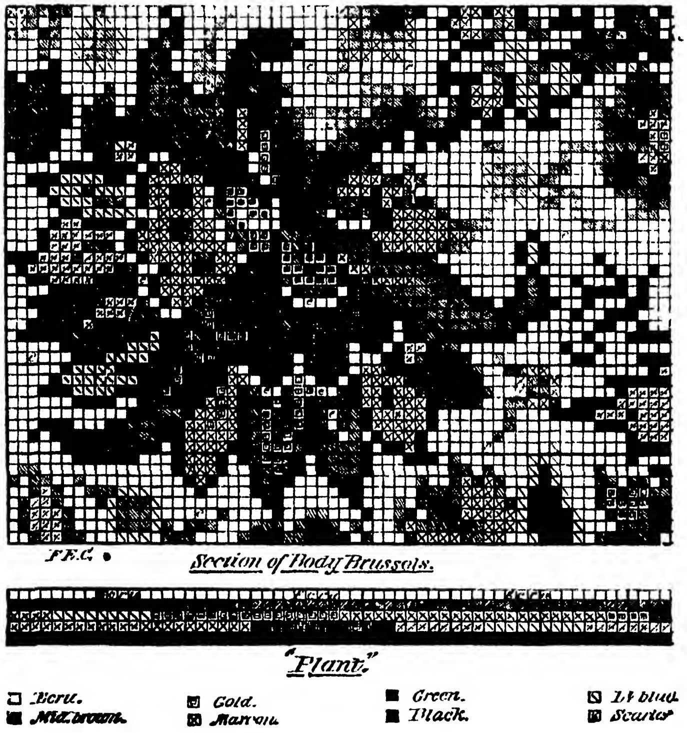


Fig. 297.—Brussels Carpet Design.

Axminster does not involve the care of "planting," but it has difficulties of its own. The design is much coarser than for Brussels. The design paper for the latter contains about 85 points to the square inch (9 × 9½ nearly); for Axminster it usually ranges between 27 and 70, although the "pitch" (*i.e.* the number of squares or points to the inch) is sometimes finer and sometimes coarser. To hit upon just about the right amount of detail that is practicable under the circumstances is no easy matter. It must be borne in mind that there must be no insensible gradation. Every shade must be level, solid, and clearly defined, no matter how light it be or how dark. The particulars of widths and lengths given for Brussels patterns apply also to Axminster in breadths.

Kidder. carpets have their pattern formed mainly by the weft threads (*i.e.* running *across* the carpet). In Wilton, Brussels, and tapestry it is formed wholly of the warp thread (*i.e.* in the direction of the length). In Axminster neither warp nor weft is seen, the pattern being formed from a third set of threads, inserted by various methods, so as to form a pile surface.

In tapestry carpets the pitch is about the same as for Brussels, and the same conditions hold good as to widths, etc. There is no limitation of colour, and a design adapted to a fine grade of Axminster would do for tapestry.

For a thorough comprehension of the technical requirements in carpet designing, Mr. Millar's article, to which we are indebted mainly for the foregoing paragraphs, should be read in its entirety and carefully digested. We may give, further, the following summary of important points that he makes for the guidance of the novice :—

Make your designs full size, and on ruled or "point" paper. Always keep in mind the "pitch" for which you are working. All manufacturers do not use the same paper, and it is important to find out what are the requirements in this respect before beginning your design. As a general thing, 9 points to the inch is the standard for Brussels carpeting, and from 7 to 5 for Axminster.

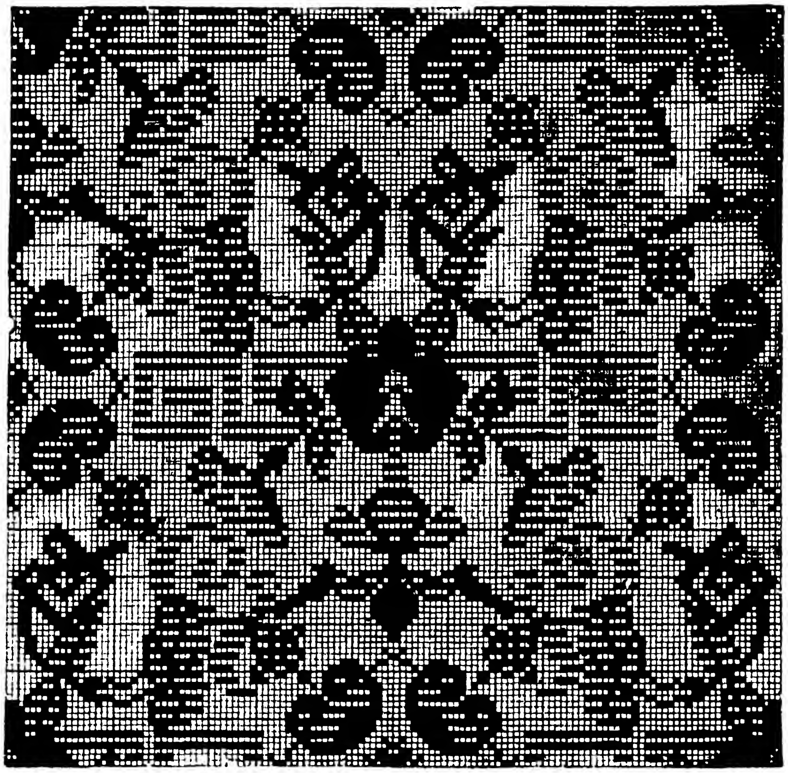


FIG. 298.—WORKING DRAWING (MUCH REDUCED) FOR A TWO-PLY INGRAIN CARPET.

Assuming, of course, that your design conforms to the technical requirements of the manufacturer, the general colour effect is what will influence him most as to its availability from the commercial point of view. No amount of good ornament will compensate for bad colour, but good colour will sometimes be allowed to offset defects of form. A Brussels design which is unsatisfactory in colour may sometimes be rendered available by means of "loom changes"; but not so with an Axminster design, to alter the colour of which often involves an amount of artistic work equal to the creation of a new design. Therefore, unless you have a decided talent for colour, do not attempt Axminster carpets, except for the simplest effects. Mr. Millar also gives the following excellent advice :—

"Never make a design vaguely for a carpet. Always have a definite fabric in view. Having chosen this, study its special requirements as to the number and arrangement of colours, and as to the special ruled paper to be used for it, and keep to it until you have mastered them. Keep a piece of the fabric for which you are working beside you. Keep also a piece of the special ruled paper from which it is woven, and carry out portions, if not the whole of this, full size.

"Copy out and lay together several repeats of the first rough sketch, to avoid striping and awkward lines."

TILES.

In an article on "Designing for Tiles,"[1] Mr. Owen Carter classifies as follows the several kinds of designs for tiles: (1) Plain geometrical floor tiling; (2) Encaustic floor tiling, alone or in combination with class 1; (3) Mosaic floor and wall tiling; (4) Plain, embossed, or printed tiles, either alone or combined, for wall surface decoration; (5) Hearth and grate cheeks; (6) Faïence. Designs for all the foregoing, he points out, would be prepared by the combination of a greater or less number of individual tiles worked together to form a pattern, which latter may again be subdivided into (7) Encaustic floor tiles; (8) Glazed embossed tiles; (9) Painted tiles; (10) Painted tiles either with a complete design on each, or united for fireplace panels, etc., or in ceramic pictures illustrating historical or other subjects.

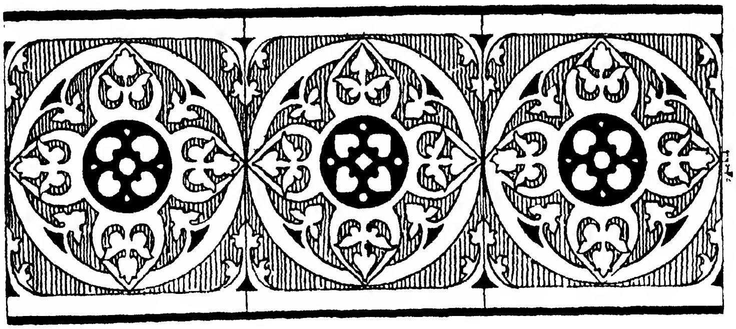
As to the colouring of the designs, Mr. Carter recommends body colours for classes 1, 2, 3, and 7, and for Nos. 4, 5, 6, 8, 9, and 10 the ordinary water colours in washes. The design is drawn in lead-pencil before the colouring, and if it is a geometrical pattern it should be lined up with a hard pencil or India ink after the colouring. The usual scale for designs for floors and walls is one inch, but half, three-quarters, and one-and-a-half inches are also used if found more convenient.

The study of the illustrated books of specimen patterns issued by the tile manufacturers will give the intending designer much valuable information as to what is required.

In preparing designs for tiles it is well to bear in mind that some colours are more costly to manufacture than others. What are called "plain colours" are the least expensive—these are Buff, Salmon, Gray, Red, Chocolate, and Black. White costs nearly twice as much, and Blue and Green nearly three times as much. Wherever the "vitreous colours" (White, Blue, and Green) are used in a design, the cost of the tiles will be greater than for plain colours.

The usual size of the hearth is 4 ft. 6 in. × 1 ft., and for the grate cheeks, 2 ft. 6 in. × 6 in. The usual sizes for tiles for the hearth are 6 × 6, 4¼ × 4¼, and 3 × 3. The average grate will take five 6 × 6 tiles on either side. These are often arranged in a continuous panel design, such as flowers springing from a vase, or a standing figure.

The smaller manufacturers are most likely to buy from outside designers. One of the larger firms is more likely to depend on its own staff of artists.



Design 246.—For Tiles, decorated in Three Colours.

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[1] "Practical Designing" (George Bell & Sons, publishers).

PREPARATION OF WORKING DESIGNS.

IN the preparation of design any mechanical means are permissible which will help the designer to produce in the quickest and easiest way the combination he seeks. He will use rulers, compasses, geometrical curves, and tracing-paper, and any one who attempts to design geometrical patterns for the art trades should be familiar with the use of the scale, the T square, and set square.

For all purposes the design must be full working size, with every detail of manufacture so plainly indicated that the artisan need never be in doubt as to the intention of the designer.

Ruled or "Point" Paper is necessary for preparing a design for a carpet, oilcloth, and such woven fabrics as Nottingham lace curtains, Madras muslin, crêpe, "tapestries," and chenille. It is not employed for designs for wall-paper, woven silk fabrics, or cretonnes and printed fabrics.

The Colours used in nearly all cases[1] are powder colours, sometimes called "distemper" or "tempora"; they are the pigments in nearly their natural state, only finely ground in spirits. All are opaque, and therefore have great density of effect. As they have no size in them, it is necessary to mix them with gum-water; but care must be taken not to use so much that they will appear glossy when applied to the design. They will, moreover, turn darker if too much gum is used with them. When you have mixed a colour, test it by applying a little to paper and when dry rubbing it slightly with the finger; if it does not rub off you have used enough gum. Some colours need more gum than others. Carmine will turn black if you use much gum with it; Ultramarine is so absorbent that it needs a good deal.

Do not let the colour settle; otherwise that at the bottom will be of a deeper tint than that first used, so that instead of one shade you will get several. To avoid this, stir the colours frequently with brush or palette-knife. Keep them free from dust. Sometimes, if left undisturbed for several hours, they harden. In that case you will have to regrind them.

The Palette-knife should be of bone or ivory; steel will affect injuriously colours of metallic origin.

It is important to produce the result required with as few colours as possible. For Nottingham lace curtains the effect aimed at is imitation by machinery of hand- and pillow-made laces. Flake White only is used, on ruled blue or black paper; yet by this means every detail is reproduced dot for dot and line for line, just as they would appear, with the thread meshes and net effects of the curtain itself. Some of the most beautiful designs of wall-papers are produced in single colour variations of the colour of the paper itself.

Wall-Paper.—After the design is converted into a working drawing by tracing, transfer it with pencil to a sheet of white water-colour paper large enough to leave a quarter of an inch margin all around.

Lay the design, after it has been satisfactorily drawn on thin paper, with a sheet of carbon paper between; let the under side of the design lie on the right side of the water-colour paper, the corners of the two papers being carefully fastened together so as to keep the pattern from losing its position. With a hard pencil follow the lines of the pattern, and when the upper paper is removed the outline will be plainly seen, and you can then trace it more firmly with a lead-pencil. Of course, pencil marks can be erased before the ground is put on, but frequently erasings give the paper a dirty appearance that a neat draughtsman will avoid. Where the design is of flower or leaf forms in their natural shape, a slight variation from the original pattern will not be noticed; but if conventional forms are transferred in the manner described above, the two papers must be held together as if glued, for the least variation in one figure may make even a greater mistake in another figure, and so on. Faint pencil marks will readily show through the thin wash of a light-coloured ground, but for a dark terra-cotta or brown ground heavier marks will be required.

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[1] For tiles and china and pottery decoration generally the design is made with ordinary water-colours. For stained and painted glass the sketch may be either in opaque or transparent colour; the cartoon is rarely fully coloured. For designs for bookbindings both transparent and opaque water-colours may be used.

Now proceed to the colouring. Remember that the colours, being opaque, cannot be erased after they have been applied to the design. Before you put brush to paper see that each tint is as you need it.

When the colour is reduced to the consistency of thick cream, transfer it to a saucer. Wet a fine sponge in cold water, wring it nearly dry, and, having dipped it in the tint intended for your ground, go over the paper, including the margin, first with vertical, then with horizontal strokes. A clear, even wash of smooth, velvet-like appearance will thus be obtained. The lines of the design will show through the tint. When the ground is thoroughly dry, take a camel-hair brush and go over them. No two wet colours must touch or they will run together. To avoid such a disaster, a space of at least a sixteenth of an inch must be left between the different colours of the pattern. To arrange leaves and flowers so that the different colours will not touch will not be easy for a beginner.

Carpets.—Ordinarily one-quarter of the full size is a good scale for the sketch ; when there is much detail one-sixth will be a better one. Opaque colour is used in accordance with the directions already given for wall-paper. Make up your mind in advance just how many shades you will use, and in a separate saucer mix enough of each to complete the design. Lay each tint on the paper solidly, uniformly, and distinctly. There must be no mixing of tints on the palette with the brush. If alterations or corrections are to be made, and it is necessary to lay one colour over another, be sure that the colour is put in solidly and that, in drying, it will match exactly the rest of the tint in other parts of the design.

Indicate forms by masses of colour only. Each square must be completely filled and only with its own colour—there must be no half-squares in the design : each square represents the thickness of a thread in the carpet, and there are no half-threads.

The pencil marks must not show through when the work is finished. Nothing must appear that is not to be literally reproduced in the textile. If outlines are to be part of the design, let them be so indicated that there can be no doubt about the designer's intention as to their actual thickness.

Silken Fabrics.—It is not necessary to colour the designs, but if it be found more agreeable to work in colour, there can be no objection to doing so. For furniture and upholstery silks it is usual to draw on white or tinted paper with a lead-pencil or crayon for outline, using the stump (see pp. 3, 16) for half-tone effects (produced in the fabric itself by interweaving the colours of the ground and figures). Half-tone effects should be used with much reserve, for the richness of a damask is due principally to the contrast between the (so-called) "satin" ground and the close weft of the somewhat duller silk of the ornament. In brocatelle the richness is got by showing a good deal of the raised "satin" figure and very little of the ground.

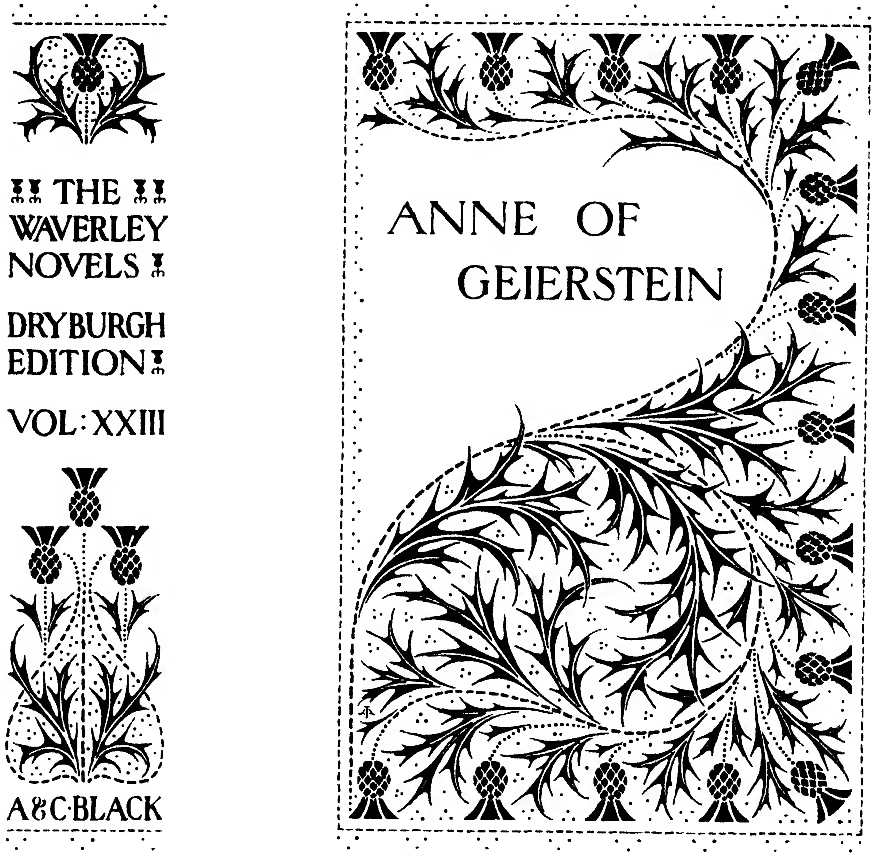
BOOK-COVERS.

Designs for ordinary "cloth" bindings are made in pen and ink on white Bristol board, to be reproduced as a "photo-zinco" block in the manner described under "Drawing for Illustration" (p. 30). "Solid" spaces of black may be put in with a brush.

Fancy shading, and even cross-hatching, unless the lines are clean cut and well apart, must be avoided. The drawing must be bold and the white lines kept well open. The lines should be as distinct as in a mediæval woodcut. The design should be as simple as possible. The drawing may be as much larger as you please than the size it is to be reproduced, but be careful that the lines do not come *too* fine in reduction.

When the design is to be printed in more than one colour, a separate drawing must be made, and a separate typographic block of it be supplied, for that part which each colour (or gold) contributes to the whole design.

A solid metal electrotype should be made from the "zinco," for it will have to stand great pressure. For that part of the design, at least, which has to be reproduced in gold, usually a die is cut in brass, for it has to stand not only great pressure, but also the heat of the blocking press and much consequent wear and tear. In many cases, brass dies are used altogether; but they are costly, and when feasible the solid electrotype from the "zinco" is substituted.

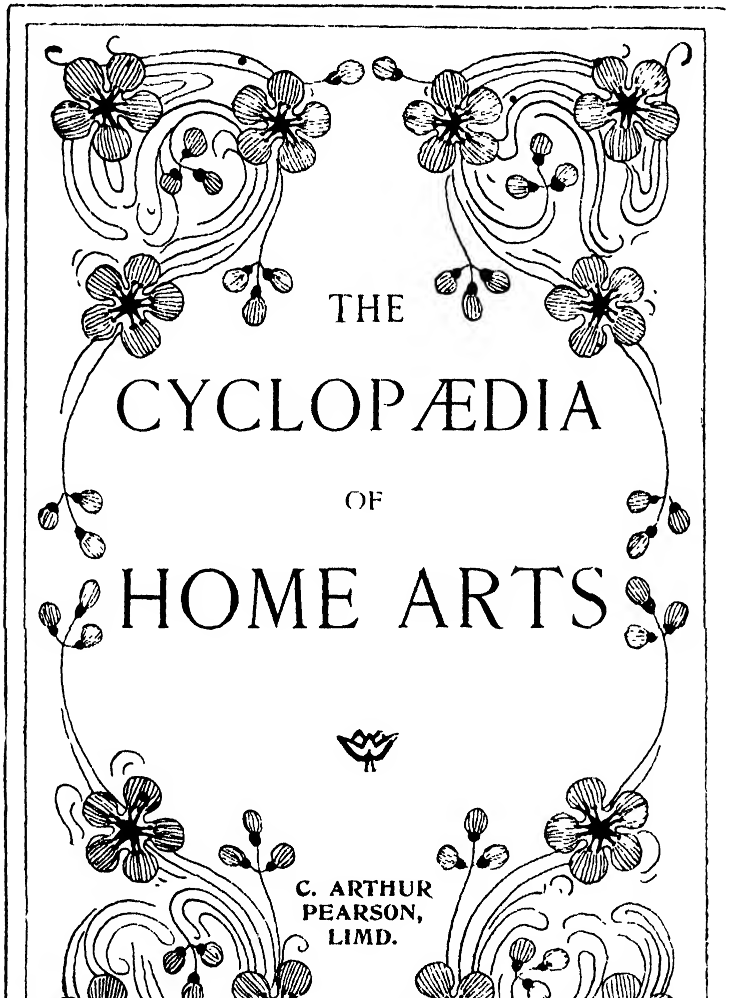


DESIGN 247.—BOOK-COVER DESIGN (MUCH REDUCED) FOR A "CLOTH" BINDING.

Reproduced (by permission of Messrs. A. & C. Black) from the original, drawn in pen and ink. The design for the back and for the side of the book are drawn on separate sheets of paper or Bristol board.

The drawing of the gilded part of the design, to be rendered by means of the die, is sometimes done on tracing-paper, yellow water-colour being washed on the back, between the outlines, to indicate the parts to be burnished, and for those where a dead gold effect is to be rendered, yellow body colour is used. Sometimes a few touches of gold paint on the face of the drawing are valuable in expressing the intention of the designer. On the back of the tracing-paper it is best to do only what tinting may be desirable.

The decoration of the boards, or sides, determines that of the back: that is to say, back and sides should be in the same style. If a spray of flowers, or knot of ribbon, or other such free motive be used, it may be carried from the front cover across the back and over on to the other cover. Otherwise only the front board and the back are decorated. A valuable exercise for the student would be to complete design 248 by adapting the motive to the back of the cover also, in the manner of Design 247. Designs 243, 244, 245 afford similar interesting exercises. In the case of Design 243, if the reader will turn this book around so that he views the design in its original vertical position, and will, in imagination, rule two vertical lines so as to divide the design into three equal parts, he will perceive that the central one will, with a little modification, supply the decoration for the back, for which Design 243 furnishes the decoration for the sides.



Design 248.—The Hawthorn. Conventional Treatment. Book-cover Decoration, "Cloth" or Leather.

MISCELLANEOUS.

RETOUCHING NEGATIVES.

ARTISTIC training is decidedly an advantage to those who undertake this work. The merely mechanical manipulation is very quickly learned; but the retoucher must be possessed of good judgment. It is a delicate matter to know just how far to go. With most negatives you must learn to temper justice with mercy; but with too much of the latter quality you are likely to obliterate the likeness.

Still, retouching is not simply beautifying; it is first of all a matter of mere justice. The photograph light, when used to obtain a strong likeness, is sure to exaggerate shadows and forms. Retouching simply softens sharp outlines and renders the shadows more transparent. Colour is also sometimes exaggerated. Take, for instance, a child with very red cheeks, and they will be dark in the picture. This would be a disfigurement were it not for the softening effects of the retouching. Indeed, so far does the work of the skilful retoucher go that he can make a good negative out of a very bad one. This latter process is often necessary when it is impossible to get another sitting.

The negative to be retouched is placed in a wooden frame with a ground-glass back, arranged so as to incline at a convenient angle for the worker, and to let the light shine through—this latter office being assisted by a reflecting mirror beneath the glass. A black cloth, in form of a canopy, excludes the light from coming in about the worker's head, and all the space at the back except the part of the negative to be retouched is darkened. As you can only see the imperfections of your negative and the places where you are to work by letting the light shine through it, the object of all this preparation is obvious.

The best retouching pencil is the old-fashioned one of real lead, but in graphite the next best is the Faber H.H.H. A kid stump, some mineral paper, or red ground-glass varnish may be also necessary; but these are only for the use of the experienced worker, and will be referred to again. To prepare the negative so as to get a "tooth" for the pencil, put on it a few drops of "madoleine," a varnish composed of turpentine and resin, and rub with the finger gently over the surface till it is evenly distributed.

A beginner usually is given several negatives to work on first, simply to see what he will do. No instructions probably are given to him. Some novices show aptitude at once. To such, suggestions are given by the photographer, who lets them begin on the most unimportant work —for example, smoothing out imperfections of flesh on arms and hands. They are next "put on" the face, and so on until they develop the capability of actually changing forms, making hollow cheeks plump, filling out a bit of drapery, and cutting off excrescences, such as angles of hair or dress trimming.

When the beginner comes to the face, he is first set to removing freckles or other blemishes of the flesh. It is sometimes a good plan to have a proof made from the negative before retouching, so that he may see the direct result of its shortcomings and just where the remedies should be applied. It is a little difficult for him to understand at first that every touch of black he puts on the negative means a touch of white in the print. Only by much practice can he accustom himself to this peculiar way of working. When he sees a line, wrinkle or freckle unpleasantly pronounced in the print, he finds a corresponding white line or spot in the negative, and these he must darken with his pencil. But he must be very careful not to do too much. The little white spot must be very delicately treated.

Suppose that he is removing a freckle: he must not exceed the space it covers, neither must he make the portion treated more opaque than the parts of the surface around it, else he will have white spots in the print. You see the mere removal of skin blemishes calls for care and discrimination.

Now we come to the lines in the face, and here is where the nicest judgment is to be used, and the mechanical gives way to artistic instincts. Freckles and other defects of the flesh are the only things in the face that should be absolutely removed; lines and wrinkles ought never to be entirely eradicated, else much of the character of the likeness will be lost. They are at most only to be very much softened, so as sometimes to leave only the slightest indications. One should begin with the forehead and the lines about the eyes, but leave the mouth alone. That is the one feature that will bear no trifling with. The likeness lies in the mouth. Let your friend put on a wig or spectacles, or in any way change the upper part of his face, and he is still your friend; but let him, if he can, in any way disguise his mouth, and you do not recognise him. Fold a piece of paper and lay it under your upper lip, and notice how instantly it changes your face.

A retoucher should have some knowledge of light and shade in pictures. He should know something of the value of a high light or a mass of dark, and should note carefully how the light has fallen on the sitter, also whether it is a direct light or a reflected one. This knowledge is especially necessary where he is to supply lights that are entirely lacking in the negative. Suppose he finds that his print is flat and tame. Clearly the way to improve it is to put in some lights here and there. Perhaps the hair may need a few sharp lines, care being taken to follow the curves of the locks; or the modelling of the face may be strengthened by a delicate lightening of the prominent portions. Accessories, such as drapery or furniture, often need little skilful lights to give them character or to add to the general effect of the composition.

RESTORATION OF DAMAGED CHINA.

To restore broken china not merely by sticking together the fragments, but by substituting missing portions, is quite within the abilities of the amateur; the work entails little skill or expense, and success in it is chiefly a matter of patience.

No matter how clean the fragments appear to be, they should be well cleansed with soap and tepid water; in cases where they are obviously greasy and dirty, the pieces should be soaked for some hours in a solution of potash. After being rinsed in clean water, let them be dried thoroughly, remembering that as earthenware, being more porous, holds much more water than porcelain, so it dries more slowly. It is always best, if possible, to repair a breakage immediately it has taken place, while the edges of the fractured parts are sharp and unchipped. If these are allowed to stay a long time, they are almost sure to get chipped, and so the joint will fit less closely, and the restoration be not only far more difficult, but show a much less neat result.

For trifling articles, small plates and the like, cement may be sufficient to impart the required strength; but for heavier pieces rivets are absolutely necessary. It is a task of no little skill to insert these so that they are not visible until the article is examined closely. For a dish it is possible, of course, to insert them at the back, so that they are not apparent until it is turned over; but for vases, jugs, and many other articles, it is almost impossible to fix them from the inside. With regard to the best cement, it is hard to single out any for special praise, but gum lac preparations should not be employed, even when allied with rivets, for heavy pieces. Silicate of potash cements, excellent as they are for glass, should not be used for pottery.

It is well to remember that all cements lose much of their power when applied in damp weather, unless special precautions are taken. In any humid climate the mending should be done in a warm room and the fragments heated in an oven or warmed separately over the flame of a spirit lamp before the cement is put upon them. The bottle containing the cement itself should be kept standing in a jar of warm water at one temperature while it is in use.

When a piece is much shattered, it is often impossible to build it up at one operation; for instance, a precious "six-mark" cup of old blue and white egg-shell porcelain was several days in progress. First, some of the tiny fragments were fitted to each other, then by degrees more were added, course by course as it were, until the sides of the cup were built up. Before adding a broken piece, it is a good plan to tilt the vase or whatever the article may be, so that, speaking roughly, the loose piece would balance itself in place even without the aid of cement. This is hard to describe; but supposing an outstretched hand has been broken off a statuette, it is obvious that if merely stuck on while the figure was upright on its base, the weight of the hand would help to open the joint. Now, the closer the pressure while the cement is setting, the better. Therefore if the figure be laid on its back and propped up until the stump of the arm is so level that the hand may be balanced upon it, it is evident that the weight of the broken fragment will help to press the joint firmly together. This is the principle to be followed throughout the operation. After all the pieces are reunited, any fissures that may be apparent, owing to the chipped edges of the fragments, should be filled up with a small quantity of the finest plaster, made into a paste with water.

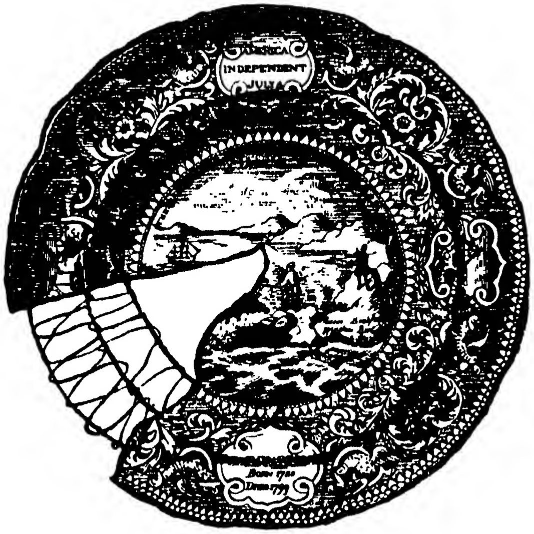


FIG. 299.—THE RESTORATION OF DAMAGED CHINA OR POTTERY.

When the breakage leaves such results as those indicated in figs. 301 and 302, the fragments may be further supported by a wire inserted as the illustrations indicate. Holes must be pierced in the ware to affix this wire, but they need not pass right through. For drilling, an ordinary centre-bit tool will often be found sufficient; but when the material is very hard, the end of the drill should be kept moist with spirits of turpentine. Use only copper or galvanised iron wire; ordinary iron wire will rust, and so should never be employed. Secure the ends of the wire with gum lac. The loose gum lac is stronger than the sort prepared in sticks.

To restore the handle of a jug, insert wire as shown in fig. 302, and build up the handle around it; the wire should be secured very firmly before the plaster is moulded into shape. If there are no pieces missing, the wire should still be used in sections where it can possibly be inserted. For a larger handle, use two wires and lace them together, until a sort of lattice girder is made, on which build up the the new handle. For large dishes a somewhat similar course may be followed. Fig. 299 shows how such a framework should be made. For a paste to restore missing portions, take some Spanish white in powder, mix it with strong gum-arabic upon a piece of glass with a palette knife. To make it very hard and durable, temper it with a little alum solution. After it is dry scrape off superfluous portions and polish with glass paper.

For restoring the colour upon portions built up of new material, water colours should alone be used. Having filled in the missing parts

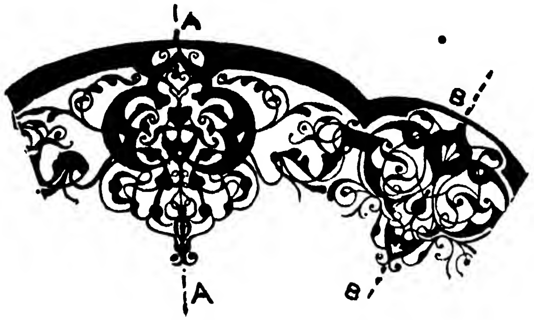
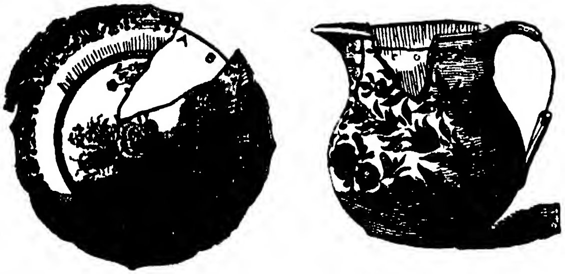


Fig. 300.—The Restoration of Damaged China or Pottery.

with plaster of Paris or with the paste just described, allow them to dry and size them with gelatine. Give two coats, and let the first be quite dry before applying the second. Gum water or starch may be used in place of the gelatine.

To copy the colours of the original, squeeze out some moist water colours upon a palette and mix them with a palette knife until the ground colour is matched; then add a coat of this and leave it to dry. If the colour is not quite right—it often changes in drying—add another until the match is perfect. To restore the decoration, if the pattern is a repeating one—as in fig. 192, for example—it will suffice to copy with a pencil the portion between the dotted line. Trace the design, whatever it be, very carefully, and then, placing the pencilled side on the place, retrace it with a hard pencil; this will transfer a faint but clear outline to the plaster. Avoid any false pencilled lines, as they are difficult to remove. Fill up the design with water-colours of the right tints. If gold is needed, use only the very best, prepared in shells; and if silver be required, employ only aluminium of the best quality.



Figs. 301, 302.—The Restoration of Damaged China or Pottery.

Finally, to impart the high glaze to the new portions, apply a coat of the best Sohnée varnish, and when this has dried add one or two others, until the surface has acquired the desired polish. The effect of articles so mended depends entirely on the patience and neatness of each step in the process, and when carefully done with well-matched colours is hardly noticeable. These directions throughout are intended to refer to valuable show pieces only, and must not be held to apply to tableware or articles in actual use.

"EXTRA ILLUSTRATING," OR "GRANGERISING."

"Extra illustrating," as the term is used by collectors, means gathering portraits of the persons and views of the places mentioned in any given book, and having the book handsomely rebound, with each portrait and view placed opposite the page where it is mentioned. Drawings, water-colours, prints or photographs, autographs—indeed, all things of the kind that pertain to any person or incident mentioned in the book—have a claim to a place in it. The pastime is fascinating and pleasurable, for pleasure consists not so much in the acquisition of a desired object as in the pursuit of it, and book illustrating is a constant pursuit of coveted prints. It is, moreover, instructive, because the collector makes himself acquainted with the history of the persons mentioned in the book he is illustrating, which leads him to read other books, and in time he becomes thoroughly conversant with the history of the period of which his book treats. The hobby is closely allied to "bibliomania," and is generally indulged in by persons who have fine libraries.

As there are books *and* books, so are there illustrators *and* illustrators. One man will be satisfied with the work of a professional illustrator, to whom he will send a volume to be thus interleaved; another will gather his illustrations from many sources and select such as his own taste decrees fit; another will embellish the work with numerous fancy head and tail pieces appropriate to the subject; and yet another—and happiest is he—who, with ready pen, pencil, and brush, can add a copy of some portrait yet unengraved or the sketch of a locality still unlimned. How it makes a brother-collector's mouth water and his fingers itch to see such within the leaves of another's book, which he, too, is illustrating!

One illustrator will be satisfied to have his print, autograph, or letter in any state, merely because he has it on the list, and once obtained that particular item can be stricken off; another may buy in succession a dozen impressions of one desired print, and yet keep on the look-out until the volume is finally bound for a still better impression of it.

In London in 1769 appeared the first edition, 2 vols., 4to, of a book which was the immediate forerunner of all books illustrated by interleaving. Its title, sufficiently comprehensive, was

> "BIOGRAPHICAL HISTORY OF ENGLAND FROM EGBERT THE GREAT TO THE REVOLUTION; consisting of characters disposed in different Classes and adapted to a Methodical Catalogue of Engraved British Heads. Intended as an essay toward reducing our Biographies to a System, and a help to the knowledge of Portraits; with a variety of Anecdotes and Memoirs of a great number of persons, not to be found in any other 'Biographical Work.'"

The preface also speaks of the utility of a collection of English portraits to supply the defects and answer the various purposes of medals.

The author was the Reverend Dr. James Granger, and from him this particular method of illustrating takes its name. Living from 1723 to 1776, he was educated at Oxford, but left without taking his degree, and upon entering into holy orders was presented to the vicarage and living of Shiplake, Oxfordshire. In the dedication of his book to Horace Walpole he states that his "name and person were known to few at the time of publication, as he had the good fortune to retire early to independence, obscurity, and content. . . . . If he had an ambition for anything it was to be an honest man and a good parish priest."

Immediately on the publication of his book the leaven began to work. "Five shillings," says Fitzgerald, "had been considered by collectors a good price for any English portrait, but at once books with portraits rose in price to five times their original value, and few could be found unmutilated.

Both pompous Dibdin and genial Burton, who were book-lovers of the same degree, but who differed in kind, were bitter enemies of Grangerising, and ridiculed the practice, giving ludicrous examples of book illustrating run mad, the one showing how the first two or three verses of the Bible might be illustrated, the latter taking the first verse alone of "How doth the little busy bee." Burton looked upon it as sheer murder—the tearing out the vitals of a friend; and we can imagine the name he would have given the Grangerites had he been living to-day.

But we trust that no one who becomes a book "illustrator" through reading this article will mutilate a really rare or valuable book.

In selecting a book to interleave, you may either fear being too ambitious, and obtain "just a little one to begin with"; or you may start on some historical work, city, county, or national, and continue making volumes out of it indefinitely.

How to split Paper.—Every book "illustrator" should know that seemingly impossible thing—how to split a piece of paper.

It is a very simple matter, and it is said that when it was first discovered in England it was applied so successfully for duplicating bank-notes that the bank authorities were driven to adopt a special paper that would baffle all attempts of the sort. For the innocent purpose of removing the printed matter that so often backs a fine impression of a woodcut or a "process" block the device is invaluable, and the process is not a complicated one. Given practice, patience, and pluck, a satisfactory result is certain.

Having selected the print you wish to detach —which in the first trial should be a worthless one and of small size—trim the margin to a half-inch all round the impression. This is supposing the whole print is about the size of a cabinet photograph. Then have ready some common wheat-flour paste, newly made—which is a very important point, as paste even a day old is apt to spoil the whole operation. Take then two stout pieces of firm linen, muslin, or similar material, a little larger than the print. This should be unwashed stuff—the sort used for rolling window blinds answers admirably. Whatever is chosen must be smooth, firm, and strong. Paste a piece of the stuff on each side of the print. Leave them to dry under pressure, and when nearly set, but not rigid and completely dry, pull the two surfaces asunder with a firm and very even force. Herein lies the whole art of the process, and here also comes failure at first, as the print will either refuse to start splitting, and you but peel off one surface of texture, or else it begins well and tears instead of separating into layers before the whole surface is split.

When you find that the sheet so treated has behaved satisfactorily, and that each piece of linen has a film of paper intact adhering to it, take the one you wish to preserve and soak it in water. Then lift the tender film very gently and mount it with starch upon a suitable piece of cardboard. When mounted, wash all the paste off the right side of the print with a camel's-hair brush dipped in water. Do this very thoroughly, and then leave the whole to dry under pressure, and the result will astonish all who see it. The film thus gained looks like what the printsellers call an "India proof"—*i.e.*, a proof printed on India paper. It is so transparent that if, without margin, it is mounted on polished white wood it looks like a transfer picture. Experts at the trick can treat a print of any size in this way with perfect success, and transfer from an illustrated journal that otherwise would probably be thrown away, a fine impression well worth framing.

TAXIDERMY.

I. SKINNING AND PREPARING.

As an art, Taxidermy is strictly of modern inception. The Greek words which make the designation—meaning "arrangement" and "skin"—express, collectively, its essential nature: the *arrangement* or manipulation of the skins of animals; practically, the removal and preservation of skins, which are either placed, unmounted, in cabinets, for examination and study, or subjected to the more complex arrangement of stuffing, mounting, and adjusting, to counterfeit as near as possible nature's likeness, and to express the characteristic habits of the individual.

Taxidermy calls for peculiar abilities. To be eminent in the art one must possess such faculties as will naturally place him higher. He must have the artistic faculty. It is not enough that he perform the simple mechanical manipulations: many such are known all over the land, and many such produce pleasing work. But there are higher possibilities. An eye for modelling is requisite. After the skin is preserved and ready for mounting, the more the operator is possessed of the faculty that makes the sculptor, the nearer he will succeed in modelling skins that express the characteristic habits of position. The details of the best work are considerable: the eyes are carefully made in glass, and the characteristic shapes of pupils and canthi and colour of irides are shown.

It is quite within the reach of the *amateur* operator to become skilled in the various manipulations required, and an ordinary amount of mechanical ability will prove sufficient for very pleasing results. Select a large bird or small quadruped for practice—a hen, we will say. The few tools required are readily suggested and easily procured. Any convenient knife, something after the shape of a paper-cutter or scalpel; a pair of stout, short-bladed shears; a lighter pair; forceps, which are exactly like those used by surgeons for dissecting; and a longer pair, with handles. The tools are shown in fig. 303. One might add to them a large skinning-knife, a pair of tow pliers, and a large and a small file.

Having the bird in hand, proceed to plug with cotton all holes made by shot, and the natural openings, to prevent blood or injecta from soiling the plumage.

In the field, when specimens are reserved for mounting, they should be placed in a cone of paper, head downward, the tail being neatly covered by folding a portion over it. We now place the bird upon the table, and separate the feathers, when they are sparsely set, in a line with the breast-bone. Make an incision through the *skin only*; have at hand a dish of oatmeal or plaster of Paris to apply freely to grease or blood, that the feathers may not be soiled. The edges of the incision are apt to curl inwards; by treating them thoroughly with the meal they are protected from this evil.

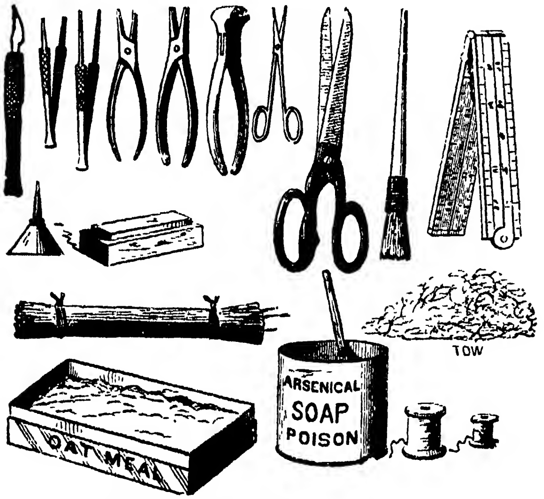


FIG. 303.—TOOLS AND MATERIALS USED IN TAXIDERMY.

The incision having been completed from the *lower end* of the breast-bone to the vent, careful manipulation with the forceps and fingers, and at times with the back of the knife, will suffice to remove the skin on both sides as low down as convenient. Place the thumb and forefinger of your right hand over the skin of the breast, press downward, and you will expose the whole breast to the neck, as seen in fig. 304. Now thrust a stout hook through the breast, beneath the "merry-thought," or in any position to sustain a strong pull; suspend the hooked body from above, as you can then the more conveniently handle it. Now sever the neck, as seen in fig. 305. Lay hold of a wing, pushing down, at the same time opening a place under the wing by aid of your fingers, in which place your scissors, and cut off at the shoulder, as in fig. 306.

Having cut off both wings, much care is requisite in separating the skin from the back. Here is the most delicate work; use great care as the loins are reached. Now take hold of a leg at the lower joint and press the skin down carefully with the fingers; insert the scissors at the joint (the *knee*, properly), and sever as in fig. 307.

Carefully force down the skin to the base of the tail and cut off; the oil sac and adhering flesh should be removed also. The legs may now be stripped of all flesh and fat—indeed, all fat should be carefully left on all parts of the body, so that the skin may be as free as possible from it. The wings may now be stripped, care being taken to use the fingers in forcing down the skin. Remove the flesh from the bones of the wings and legs. Do not separate the shafts of the feathers—which are now seen adhering to the bone. In large birds the wing may be conveniently opened from the outside; an incision made on the under side will allow room to remove the flesh.

Having now removed the body, and properly cleaned the wing and leg bones, we may very easily strip the skin down from the neck. Before doing this, introduce the hook into the severed end of the neck, and suspend the skin, head downward, from above. The skin will leave the neck very readily, but as soon as the skull is reached manœuvre carefully. Patient manipulating with the fingers will remove the skin from nearly all birds' heads. Owls and a few other birds will require a slit made in the neck at this point, which may be sewed up before the skin is turned. The ear openings are first encountered; the membrane which covers them should be carefully pushed off the skull by the finger-nail, or a blunt stick; little cutting is required. Then the eyes: carefully push the skin away until the eye-socket is completely exposed. The membrane which holds the skin in place around the eyes should e separated so skilfully as to leave the eyelids of the skin perfect in their borders. Push the skin farther down towards the bill, and then remove the eyes and all flesh that can be separated from the skull. Continue the skinning to the base of the bill. The under jaw should be denuded of its flesh; the tongue and all soft parts in this region removed. The base of the skull should now be cut through, removing a part of the roof of the mouth; the brain is now entirely removed, and all other soft parts.

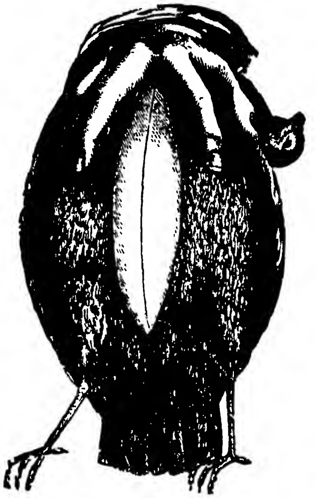


FIG. 304.—SKINNING AND PREPARING THE BIRD.

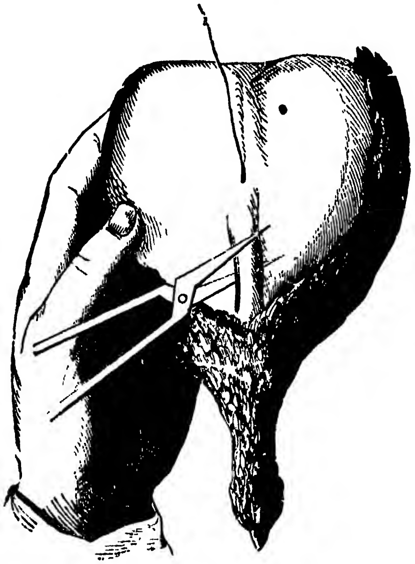


FIG. 305.—SKINNING AND PREPARING THE BIRD.

The preserving process is now in order. Have a wide-mouthed bottle of *pure* arsenic, which should be plainly labelled POISON!—and kept securely stopped, and away from all other articles. With a common painter's "sash tool" or brush apply the dry arsenic freely to every fleshy part that can be reached. Begin with the head. Apply the arsenic to the eye-sockets very freely, to the interior of skull, and then fill these parts with cotton. The mouth and jaws will require a thorough poisoning. Apply the poison freely to every other part, working it well into the wing portions and into the legs. Arsenic is not deleterious, used in a proper manner; it is deadly poison taken into the stomach. The worst that happens to those who use great quantities, or handle it with

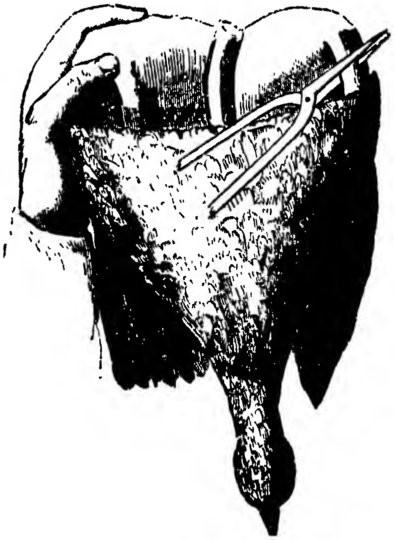


FIG. 306.—SKINNING AND PREPARING THE BIRD.

abraded or cut hands, is a slight soreness in the more tender parts, as under the nails; this is avoided very considerably by oiling the hands, or washing them in glycerine. The arsenical soaps are prized by some, but we much prefer the dry powder, as being more convenient and more efficient.

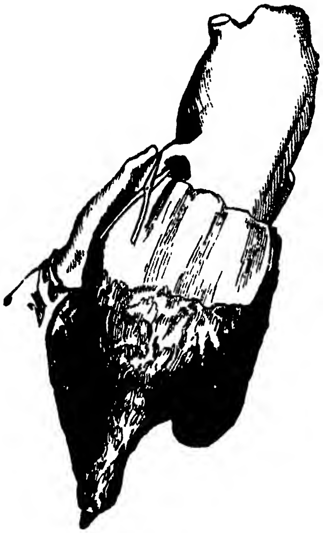


FIG. 307.—SKINNING AND PREPARING THE BIRD.

The legs of the bird and the bill should be varnished, to preserve them from the attacks of insects.

The skin is now ready to turn into its proper shape, when the feathers must be smoothed into place, and if the skin is to be only used for examination or study, it may be filled out with cotton and arranged in the shape seen in fig. 309. Before this is done the wing bones should be tied, on the inside, to each other, leaving a space between the ends of about an inch—or sufficient to allow the wings to assume a natural position. The leg bones should be wrapped with cotton. To make a neat cabinet specimen, like the fig. 309, a piece of pine wood is wrapped with tow or cotton, and the upper end passed on to the skull; the lower end projects a little to allow the specimen to be handled without disturbing the plumage. The skin is now neatly brought into shape and sewed.

White feathers that are soiled may be cleansed by washing in soap and water, and repeatedly dried off by sprinkling with plaster of Paris.

To skin and preserve a quadruped the processes are so similar that any one having sufficient skill to do the one may successfully cope with the other.

II. MOUNTING.

Our specimen is now neatly filled with a temporary body, the skin having been thoroughly poisoned and preserved, and made pretty surely proof against the attack of insects, and not subject to decomposition; this indefinitely, if proper manipulation is observed.

In this condition it is useful for study, and is in the required state for the cabinet. Should the specimen, however, at any time, be selected to "set up," the following course may be followed:—

In a sheet of *cotton batting* closely envelop the bird or quadruped, allowing several folds to cover it. A coarse cloth, well saturated with clean water, is wrapped loosely around the cotton, and the whole set aside for a few hours. At the expiration of twenty-four hours the smaller skins are softened sufficiently, and will be found to be much in the same condition as that of a freshly-skinned animal. The moisture has penetrated to all parts, and the roots of feathers or hair are so pliable that the exterior

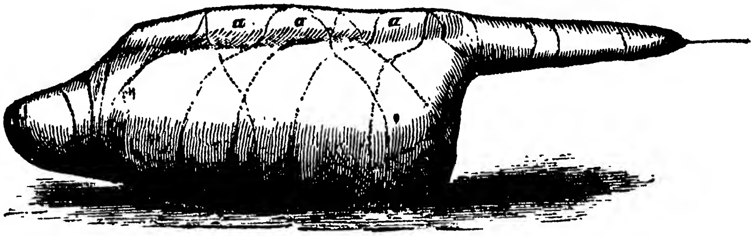


FIG. 308.—MOUNTING THE BIRD.

The parts *a*, *a*, *a*, should be sewn through, to form on each side a depression suitable for the fitting in of the wing bones when the body is in place.

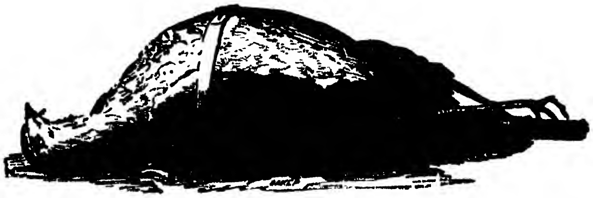


FIG. 309.—MOUNTING THE BIRD. THE COMPLETED BODY.

portions may be easily smoothed and returned to their proper places.

We now arrive at an important division of our subject—that which calls for the "counterfeit presentment" of life, which will be more or less successful as we possess skill in manipulation, and an eye to reassemble the parts after nature's pattern.

Naturally we would select a fresh object, one that we may skin and mount at one sitting, before the parts become dried. The processes are much the same in each case. Our specimen in hand, and thoroughly softened, we remove the temporary stuffing. With soft hay or moss form a body -cotton is not used for this, as the necessary wires cannot be thrust into such a body easily—wrap tightly with "shoe thread," or similar, using the thread very freely, and carefully moulding the body, as we proceed, to resemble the natural body. In case of having a fresh specimen, the body should always be before us until this process is finished. In fig. 308 the parts *a a a* should be sewn through to form on each side a depression suitable for the fitting in of the wing bones when the body is in place.

An iron wire sharpened at each end is thrust along the back, and clinched at the large end of the body, the opposite or anterior end to project a little, upon which we now wind cotton or soft tow, to form the neck, all being tightly secured with thread, and moulded neatly to match the natural neck in size. Fig. 309 shows the completed body.

The skin is now laid out, and the sharpened neck wire thrust through the skull, and out from the forehead a little, to give room to adjust the neck at proper length. The wing bones are tied together, a small space being left between the ends, about a half-inch for small birds. The skin is now brought carefully over the artificial body, and the feathers neatly adjusted. If there are any soiled feathers, as is frequently the case, they should be cleaned before the process goes further; this is done by washing in soapy water and freely absorbing with plaster of Paris powder, the latter to be repeatedly alternated with washings, and at last used until the feathers are entirely dry.

Wires are now prepared for supporting the body. Two iron wires, the same in size as used for the body, are sharpened and thrust through the feet and legs, and into the body, following along the leg bones, upon which should be wound cotton or tow to fill out the thighs. The sharpened end of one of the wires is seen in fig. 310 near the breast, where it is turned in to stiffen the hold upon the body. A better way is to clinch the two wires at the same point, and turn them both into the breast. The skin is now adjusted around the body, and the parts brought together in front. With a needle and thread the edges of the incision are carefully secured; the skin being tender, some care is requisite in this operation. If the body is correctly proportioned to the skin it will be readily accomplished. We have now a structure sufficiently complete to support itself stiffly when the leg wires are made fast.

A stand is prepared, perch or flat disk, according to the nature of the bird (some perch habitually, while others always alight and progress upon the flat ground). The leg wires are now passed through the stand and the bird brought up into shape as in fig. 310. You will readily perceive that the wires of the neck and legs are susceptible of considerable flexion, and in the judicious manipulation of this framework lies the secret of good taxidermy. The neck may be bent in any position you may choose that corresponds to nature. The feathers require adjusting, the wings to be placed, and the whole body carefully smoothed. In these operations the surgeon's forceps will be found useful. The wings require pinning; for this purpose iron wires sharpened are useful, the ends left protruding sufficiently to catch the loops of thread which will be wound over the feathers as a last operation, as in fig. 311. A bit of wire looped over the tail compresses and spreads the feathers neatly. After the bird is fairly mounted in this manner, it is usually necessary to examine the throat and eye sockets and supply the needful stuffing of cotton to fill out properly those parts. The bill should be wound by a thread to close it, and this, with all other temporary appliances, should be allowed to remain for several days, when the parts will be thoroughly dry. The eyes are replaced by excellent glass substitutes, which are readily obtained.[1] Most small glass eyes are provided with wires, which may be plunged into the stuffing. Hence it will be well to have the stuffing of the eyes of the same material as that of the body, as the wire does not easily penetrate cotton. The eyelids are carefully drawn around the glass eyes sufficiently to hold them in place. Eyes are made to imitate all known forms, and the various colours of irides are well executed. Among the larger kinds, those required for quadrupeds, great excellence is attained; the peculiar forms and positions of the pupil are observed.

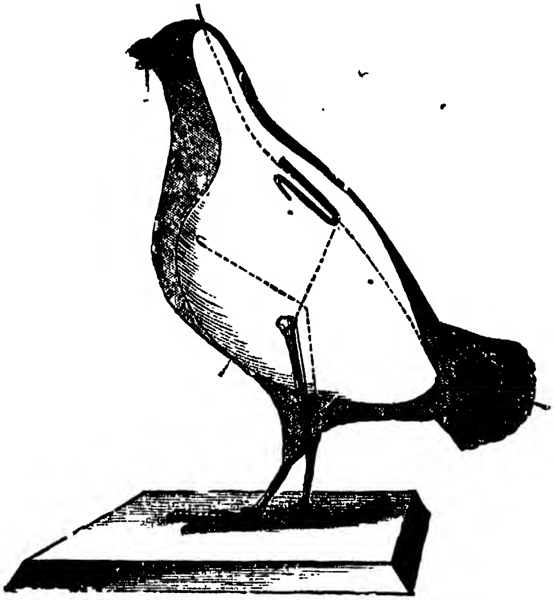


FIG. 310.—THE BIRD BROUGHT UP INTO SHAPE ON THE STAND.

The leg wires are passed through the stand. Like those of the neck, they are susceptible of considerable flexion, and in the judicious manipulation of this framework lies the secret of good taxidermy.

Our specimen is now in the condition of that in fig. 311—well wound with thread, the feathers in place, the tail spread, and the correct position assumed. It is customary to leave the wire projecting out from the skull until the skin is well dried and shrinkage has ceased; it may then be cut even with the skull and the part carefully concealed by feathers.

We assume that a specimen prepared in the thorough manner herein described will remain indefinitely unharmed by moths or other noxious insects. The arsenic powder carefully introduced into every part of the fleshy portion is sufficient. It only remains to say that it is always difficult to poison the internal portions of the legs and bill, therefore we apply a solution of corrosive sublimate to those parts, and eventually varnish them; this done, it is pretty safe to say that the specimen will remain intact.

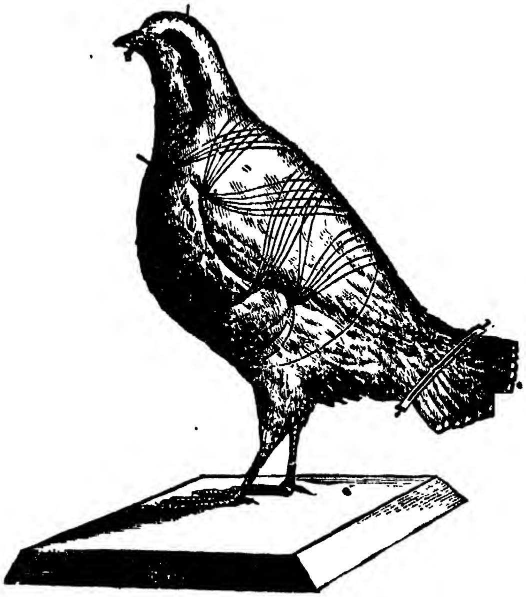


FIG. 311.—MOUNTING THE BIRD. THE LAST OPERATION.

The feathers require adjusting, the wings to be placed, and the whole body carefully smoothed.

We can add one very important item of interest. In the very common event of the reader having specimens of skins that have not been properly poisoned, as many that come from abroad are not, it is desirable, should the skins show evidence of the presence of moths, or anthrinæ, or their eggs, to rid them at once of the pests. Dip the skins into pure naphtha, and, after a thorough soaking, dry very quickly by steam. The evaporation is so rapid, and the naphtha so clean, no injury whatever is done to the plumage; neither to the colour nor texture.

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[1] These, as well as all the tools and appliances, can be had of Mr. E. H. Meek, 56, Brompton Road, S.W.

III. INSECT TAXIDERMY.

At the Museum of Natural History one may see beautiful work of this kind, each species of insect being illustrated by a prepared specimen of the various phases in which it appears, from the egg to the perfect form. The plant on which the insect feeds is arranged with the specimens, together with the nest that each makes. The worms are emptied of their contents and preserved with much care, showing the various stages; many of them are of brilliant colours, and retain a very natural appearance. The cocoons and the silken or other products are also shown. In some instances spiders' nests prove to be made up of tough and beautiful silk.

The art is within the reach of the young amateur, and a tolerable exercise of ingenuity will produce very interesting results. The principal manipulation is with the worms or larvæ. You wish to preserve, for example, one of the great green worms that you find eating your grape-vine. Make an incision across the posterior portion, just sufficient to include the end of the alimentary canal; press the contents of the worm out through the opening, gently, and with special care in the case of the tussock-moth worms and others that have hairy or other appendages. Though seemingly a hazardous thing to do (as respects the integrity of the specimen), yet the most delicate hairy caterpillars may be very successfully emptied of their contents. Indeed, they are by this process so cleaned internally that, practically, they are *skinned*, and you have the skin now to deal with.

Select a good straw, of size proportioned to the specimen; this is to be used as a blowpipe, and should, therefore, be a whole one, and several inches in length. Introduce the straw carefully within the cut end of the worm, and tie the end around the straw with fine silk. If the operation of squeezing has been successful, it remains to inflate the body for preservation. Prepare a dish of live embers, and over these hold the specimen using great care in the degree of heat applied. While holding the worm in this way, keep it inflated. The form which the insect is to assume for the cabinet should be considered while this drying process is going on. Some light wooden frame, such as will be readily suggested to the operator, will often be of service to hold the specimen in the proper position. Some worms may require to be curved, or put into a shape characteristic of them while living. Attention to these points will contribute greatly to the value and pleasing appearance of the specimen. The straw, after the drying, is cut off near the body, as it is convenient to allow a small portion to project outside, so that the specimen may be pinned to the cabinet through it, thus avoiding the injury that results from passing the pin through the body.

The specimen is now complete, unless we choose to adopt some method of poisoning it. Corrosive sublimate, which is sometimes used, is likely to injure the colours. A strong arsenical solution may be applied with a brush, safely, as regards the colours. Caterpillars prepared in this manner preserve their colour and form nearly perfect, the hairs and other appendages retaining a remarkably natural appearance, which, of course, enhances greatly the beauty and usefulness of an entomological cabinet.

An extended field is open to any one who may practise this branch of taxidermy.

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